



## SEQUENCE LISTING

<110> Stahl, Andreas  
Hirsch, David J.  
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<120> FATTY ACID TRANSPORT PROTEINS

<130> WHI97-21p3MC2

<140> 09/405,504

<141> 1999-09-23

<150> 09/232,201

<151> 1999-01-14

<150> 60/071,374

<151> 1998-01-15

<150> 60/093,491

<151> 1998-07-20

<150> 60/110,941

<151> 1998-12-04

<160> 105

<170> FastSEQ for Windows Version 3.0

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<212> PRT

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Glu Cys Asn Cys Ser Ile Ala Asn Met Asp Gly Lys Val Gly Ser Cys  
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 Gly Phe Asn Ser Arg Ile Leu Thr His Val Tyr Pro Ile Arg Leu Val  
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 Lys Val Asn Glu Asp Thr Met Glu Pro Leu Arg Asp Ser Glu Gly Leu  
 180 185 190  
 Cys Ile Pro Cys Gln Pro Gly Glu Pro Gly Leu Leu Val Gly Gln Ile  
 195 200 205  
 Asn Gln Asp Pro Leu Arg Arg Phe Asp Gly Tyr Val Ser Asp Ser  
 210 215 220  
 Ala Thr Asn Lys Lys Ile Ala His Ser Val Phe Arg Lys Gly Asp Ser  
 225 230 235 240  
 Ala Tyr Leu Ser Gly Asp Val Leu Val Met Asp Glu Leu Gly Tyr Met  
 245 250 255  
 Tyr Phe Arg Asp Arg Ser Gly Asp Thr Phe Arg Trp Arg Gly Glu Asn  
 260 265 270  
 Val Ser Thr Thr Glu Val Glu Ala Val Leu Ser Arg Leu Leu Gly Gln  
 275 280 285  
 Thr Asp Val Ala Val Tyr Gly Val Ala Val Pro Gly Val Glu Gly Lys  
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 Ala Gly Met Ala Ala Ile Ala Asp Pro His Ser Gln Leu Asp Pro Asn  
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 <213> Mus musculus

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 Gly Ile Asn Lys Ser Asp Val Val Tyr Ile Thr Met Pro Met Tyr His  
 35 40 45  
 Ser Ala Ala Gly Ile Met Gly Ile Gly Ser Leu Ile Ala Phe Gly Ser  
 50 55 60  
 Thr Ala Val Ile Arg Lys Lys Phe Ser Ala Ser Asn Phe Trp Lys Asp  
 65 70 75 80  
 Cys Val Lys Tyr Asn Val Thr Ala Thr Leu Tyr Val Gly Glu Ile Leu  
 85 90 95  
 Arg Tyr Leu Cys Asn Val Pro Glu Gln Pro Glu Asp Lys Ile His Thr  
 100 105 110  
 Val Arg Leu Ala Met Gly Thr Gly Leu Arg Ala Asn Val Trp Lys Asn  
 115 120 125  
 Phe Gln Gln Arg Phe Gly Pro Ile Arg Ile Trp Glu Phe Tyr Gly Ser  
 130 135 140  
 Thr Glu Gly Asn Val Gly Leu Met Asn Tyr Val Gly His Cys Gly Ala  
 145 150 155 160  
 Val Gly Arg Thr Ser Cys Ile Leu Arg Met Leu Thr Pro Phe Glu Leu  
 165 170 175  
 Val Gln Phe Asp Ile Glu Thr Ala Glu Pro Leu Arg Asp Lys Gln Gly  
 180 185 190  
 Phe Cys Ile Pro Val Glu Pro Gly Lys Pro Gly Leu Leu Thr Lys  
 195 200 205

Val Arg Lys Asn Gln Pro Phe Leu Gly Tyr Arg Gly Ser Gln Ala Glu  
 210 215 220  
 Ser Asn Arg Lys Leu Val Ala Asn Val Arg Arg Val Gly Asp Leu Tyr  
 225 230 235 240  
 Phe Asn Thr Gly Asp Val Leu Thr Leu Asp Gln Glu Gly Phe Phe Tyr  
 245 250 255  
 Phe Gln Asp Arg Leu Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val  
 260 265 270  
 Ser Thr Gly Glu Val Glu Cys Val Leu Ser Ser Leu Asp Phe Leu Glu  
 275 280 285  
 Glu Val Asn Val Tyr Gly Val Pro Val Pro Gly Cys Glu Gly Lys Val  
 290 295 300  
 Gly Met Ala Ala Val Lys Leu Ala Pro Gly Lys Thr Phe Asp Gly Lys  
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 Lys Tyr Gln His Val Arg Ser Trp Leu Pro Ala Tyr Ala Thr Pro His  
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 Phe Ile Arg

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 <211> 345  
 <212> PRT  
 <213> Caenorhabditis elegans

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 Thr Ala Ala Leu Leu Gly Ala Cys Ala Ile Leu Ser His Gly Gly Cys  
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 Leu Ala Leu Ser His Lys Phe Ser Ala Ser Thr Phe Trp Lys Gln Val  
 65 70 75 80  
 Tyr Leu Thr Gly Ala Thr His Ile Gln Tyr Ile Gly Glu Ile Cys Arg  
 85 90 95  
 Tyr Leu Leu Ala Ala Asn Pro Cys Pro Glu Glu Lys Gln His Asn Val  
 100 105 110  
 Arg Leu Met Trp Gly Asn Gly Leu Arg Gly Gln Ile Trp Lys Glu Phe  
 115 120 125  
 Val Gly Arg Phe Gly Ile Lys Lys Ile Gly Glu Leu Tyr Gly Ser Thr  
 130 135 140  
 Glu Gly Asn Ser Asn Ile Val Asn Val Asp Asn His Val Gly Ala Cys  
 145 150 155 160  
 Gly Phe Met Pro Ile Tyr Pro His Ile Gly Ser Leu Tyr Pro Val Arg  
 165 170 175  
 Leu Ile Lys Val Asp Arg Ala Thr Gly Glu Leu Glu Arg Asp Lys Asn  
 180 185 190  
 Gly Leu Cys Val Pro Cys Val Pro Gly Glu Thr Gly Glu Met Val Gly  
 195 200 205  
 Val Ile Lys Glu Lys Asp Ile Leu Leu Lys Phe Glu Gly Tyr Val Ser  
 210 215 220  
 Glu Gly Asp Thr Ala Lys Lys Ile Tyr Arg Asp Val Phe Lys His Gly  
 225 230 235 240  
 Asp Lys Val Phe Ala Ser Gly Asp Ile Leu His Trp Asp Asp Leu Gly  
 245 250 255  
 Tyr Leu Tyr Phe Val Asp Arg Cys Gly Asp Thr Phe Arg Trp Lys Gly  
 260 265 270

Glu Asn Val Ser Thr Thr Glu Val Glu Gly Ile Leu Gln Pro Val Met  
 275 280 285  
 Asp Val Glu Asp Ala Thr Val Tyr Gly Val Thr Val Gly Lys Met Glu  
 290 295 300  
 Gly Arg Ala Gly Met Ala Gly Ile Val Val Lys Asp Gly Thr Asp Val  
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 Glu Lys Phe Ile Ala Asp Ile Thr Ser Arg Leu Thr Glu Asn Leu Ala  
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 Ser Tyr Ala Ile Pro Val Phe Ile Arg  
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&lt;210&gt; 4

&lt;211&gt; 356

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 4

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 Ser Met Arg Ala Ala Asp Val Leu Tyr Asp Cys Leu Pro Leu Tyr His  
 35 40 45  
 Ser Ala Gly Asn Ile Met Gly Val Gly Gln Cys Val Ile Tyr Gly Leu  
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 Thr Val Val Leu Arg Lys Lys Phe Ser Ala Ser Arg Phe Trp Asp Asp  
 65 70 75 80  
 Cys Val Lys Tyr Asn Cys Thr Val Val Gln Tyr Val Gly Glu Val Cys  
 85 90 95  
 Arg Tyr Leu Leu His Thr Pro Ile Ser Lys Tyr Glu Lys Met His Lys  
 100 105 110  
 Val Lys Val Ala Tyr Gly Asn Gly Leu Arg Pro Asp Ile Trp Gln Asp  
 115 120 125  
 Phe Arg Lys Arg Phe Asn Ile Glu Val Ile Gly Glu Phe Tyr Ala Ala  
 130 135 140  
 Thr Glu Ala Pro Phe Ala Thr Thr Thr Phe Gln Lys Gly Asp Phe Gly  
 145 150 155 160  
 Ile Gly Ala Cys Arg Asn Tyr Gly Thr Ile Ile Gln Trp Phe Leu Ser  
 165 170 175  
 Phe Gln Gln Thr Leu Val Arg Met Asp Pro Asn Asp Asp Ser Val Ile  
 180 185 190  
 Tyr Arg Asn Ser Lys Gly Phe Cys Glu Val Ala Pro Val Gly Glu Pro  
 195 200 205  
 Gly Glu Met Leu Met Arg Ile Phe Phe Pro Lys Lys Pro Glu Thr Ser  
 210 215 220  
 Phe Gln Gly Tyr Leu Gly Asn Ala Lys Glu Thr Lys Ser Lys Val Val  
 225 230 235 240  
 Arg Asp Val Phe Arg Arg Gly Asp Ala Trp Tyr Arg Cys Gly Asp Leu  
 245 250 255  
 Leu Lys Ala Asp Glu Tyr Gly Leu Trp Tyr Phe Leu Asp Arg Met Gly  
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 Asp Thr Phe Arg Trp Lys Ser Glu Asn Val Ser Thr Thr Glu Val Glu  
 275 280 285  
 Asp Gln Leu Thr Ala Ser Asn Lys Glu Gln Tyr Ala Gln Val Leu Val  
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 Val Gly Ile Lys Val Pro Lys Tyr Glu Gly Arg Ala Gly Phe Ala Val  
 305 310 315 320  
 Ile Lys Leu Thr Asp Asn Ser Leu Asp Ile Thr Ala Lys Thr Lys Leu  
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 <211> 334  
 <212> PRT  
 <213> Mycobacterium tuberculosis

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 35 40 45  
 His Asn Asn Ala Leu Thr Val Ala Val Ser Ser Val Ile Asn Ser Gly  
 50 55 60  
 Ala Thr Leu Ala Leu Gly Lys Ser Phe Ser Ala Ser Arg Phe Trp Asp  
 65 70 75 80  
 Glu Val Ile Ala Asn Arg Ala Thr Ala Phe Val Tyr Ile Gly Glu Ile  
 85 90 95  
 Cys Arg Tyr Leu Leu Asn Gln Pro Ala Lys Pro Thr Asp Arg Ala His  
 100 105 110  
 Gln Val Arg Val Ile Cys Gly Asn Gly Leu Arg Pro Glu Ile Trp Asp  
 115 120 125  
 Glu Phe Thr Thr Arg Phe Gly Val Ala Arg Val Cys Glu Phe Tyr Ala  
 130 135 140  
 Ala Ser Glu Gly Asn Ser Ala Phe Ile Asn Ile Phe Asn Val Pro Arg  
 145 150 155 160  
 Thr Ala Gly Val Ser Pro Met Pro Leu Ala Phe Val Glu Tyr Asp Leu  
 165 170 175  
 Asp Thr Gly Asp Pro Leu Arg Asp Ala Ser Gly Arg Val Arg Arg Val  
 180 185 190  
 Pro Asp Gly Glu Pro Gly Leu Leu Ser Arg Val Asn Arg Leu Gln  
 195 200 205  
 Pro Phe Asp Gly Tyr Thr Asp Pro Val Ala Ser Glu Lys Lys Leu Val  
 210 215 220  
 Arg Asn Ala Phe Arg Asp Gly Asp Cys Trp Phe Asn Thr Gly Asp Val  
 225 230 235 240  
 Met Ser Pro Gln Gly Met Gly His Ala Ala Phe Val Asp Arg Leu Gly  
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 Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Gln Val Glu  
 260 265 270  
 Ala Ala Leu Ala Ser Asp Gln Thr Val Glu Glu Cys Thr Val Tyr Gly  
 275 280 285  
 Val Gln Ile Pro Arg Thr Gly Gly Arg Ala Gly Met Ala Ala Ile Thr  
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 <212> DNA  
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<400> 6

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aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaa		2087

&lt;210&gt; 7

&lt;211&gt; 613

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 7

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Leu	Ala	Tyr	Leu	Ala	Arg	Glu	Gln	Pro	Thr	His	Thr	Phe	Leu	Ile	His
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Gly	Ala	Gln	Arg	Phe	Ser	Tyr	Ala	Glu	Ala	Glu	Arg	Glu	Ser	Asn	Arg
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Ile	Ala	Arg	Ala	Phe	Leu	Arg	Ala	Arg	Gly	Trp	Thr	Gly	Gly	Arg	Arg
	50					55					60				
Gly	Ser	Gly	Arg	Gly	Ser	Thr	Glu	Glu	Gly	Ala	Arg	Val	Ala	Pro	Pro
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Ala	Gly	Asp	Ala	Ala	Ala	Arg	Gly	Thr	Thr	Ala	Pro	Pro	Leu	Ala	Pro
			85						90					95	
Gly	Ala	Thr	Val	Ala	Leu	Leu	Leu	Pro	Ala	Gly	Pro	Asp	Phe	Leu	Trp
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Ile	Trp	Phe	Gly	Leu	Ala	Lys	Ala	Gly	Leu	Arg	Thr	Ala	Phe	Val	Pro
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Thr Ala Leu Arg Arg Gly Pro Leu Leu His Cys Leu Arg Ser Cys Gly  
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 Ala Ser Ala Leu Val Leu Ala Thr Glu Phe Leu Glu Ser Leu Glu Pro  
 145 150 155 160  
 Asp Leu Pro Ala Leu Arg Ala Met Gly Leu His Leu Trp Ala Thr Gly  
 165 170 175  
 Pro Glu Thr Asn Val Ala Gly Ile Ser Asn Leu Leu Ser Glu Ala Ala  
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 Asp Gln Val Asp Glu Pro Val Pro Gly Tyr Leu Ser Ala Pro Gln Asn  
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 Ile Met Asp Thr Cys Leu Tyr Ile Phe Thr Ser Gly Thr Thr Gly Leu  
 210 215 220  
 Pro Lys Ala Ala Arg Ile Ser His Leu Lys Val Leu Gln Cys Gln Gly  
 225 230 235 240  
 Phe Tyr His Leu Cys Gly Val His Gln Glu Asp Val Ile Tyr Leu Ala  
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 Leu Pro Leu Tyr His Met Ser Gly Ser Leu Leu Gly Ile Val Gly Cys  
 260 265 270  
 Leu Gly Ile Gly Ala Thr Val Val Lys Pro Lys Phe Ser Ala Ser  
 275 280 285  
 Gln Phe Trp Asp Asp Cys Gln Lys His Arg Val Thr Val Phe Gln Tyr  
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 Glu Phe Asp His Lys Val Arg Leu Ala Val Gly Ser Gly Leu Arg Pro  
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 Asp Thr Trp Glu Arg Phe Leu Arg Arg Phe Gly Pro Leu Gln Ile Leu  
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 Glu Thr Tyr Gly Met Thr Glu Gly Asn Val Ala Thr Phe Asn Tyr Thr  
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 Gly Arg Gln Gly Ala Val Gly Arg Ala Ser Trp Leu Tyr Lys His Ile  
 370 375 380  
 Phe Pro Phe Ser Leu Ile Arg Tyr Asp Val Met Thr Gly Glu Pro Ile  
 385 390 395 400  
 Arg Asn Ala Gln Gly His Cys Met Thr Thr Ser Pro Gly Glu Pro Gly  
 405 410 415  
 Leu Leu Val Ala Pro Val Ser Gln Gln Ser Pro Phe Leu Gly Tyr Ala  
 420 425 430  
 Gly Ala Pro Glu Leu Ala Lys Asp Lys Leu Leu Lys Asp Val Phe Trp  
 435 440 445  
 Ser Gly Asp Val Phe Phe Asn Thr Gly Asp Leu Leu Val Cys Asp Glu  
 450 455 460  
 Gln Gly Phe Leu His Phe His Asp Arg Thr Gly Asp Thr Ile Arg Trp  
 465 470 475 480  
 Lys Gly Glu Asn Val Ala Thr Thr Glu Val Ala Glu Val Leu Glu Thr  
 485 490 495  
 Leu Asp Phe Leu Gln Glu Val Asn Ile Tyr Gly Val Thr Val Pro Gly  
 500 505 510  
 His Glu Gly Arg Ala Gly Met Ala Ala Leu Ala Leu Arg Pro Pro Gln  
 515 520 525  
 Ala Leu Asn Leu Val Gln Leu Tyr Ser His Val Ser Glu Asn Leu Pro  
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 Pro Tyr Ala Arg Pro Arg Phe Leu Arg Leu Gln Glu Ser Leu Ala Thr  
 545 550 555 560  
 Thr Glu Thr Phe Lys Gln Gln Lys Val Arg Met Ala Asn Glu Gly Phe  
 565 570 575  
 Asp Pro Ser Val Leu Ser Asp Pro Leu Tyr Val Leu Asp Gln Asp Ile  
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 Gly Asp Leu Arg Ile  
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 <212> DNA  
 <213> Mus musculus

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 tcatcttttg cagttagatg gcctcagcta tctgtgagat ccatgctagc ctggagccca 180  
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 ttacagataa gctcttctac atctacacat cgggcaccac ggggctaccc aaagctgcca 360  
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<210> 9  
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 <212> PRT  
 <213> Mus musculus

<400> 9  
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Asp	Thr	Ser	Lys	Ala	Arg	Ala	Leu	Ile	Phe	Gly	Ser	Glu	Met	Ala	Ser
		35					40					45			
Ala	Ile	Cys	Glu	Ile	His	Ala	Ser	Leu	Glu	Pro	Thr	Leu	Ser	Leu	Phe
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Cys	Ser	Gly	Ser	Trp	Glu	Pro	Ser	Thr	Val	Pro	Val	Ser	Thr	Glu	His
65					70					75				80	
Leu	Asp	Pro	Leu	Leu	Glu	Asp	Ala	Pro	Lys	His	Leu	Pro	Ser	His	Pro
			85					90						95	
Asp	Lys	Gly	Phe	Thr	Asp	Lys	Leu	Phe	Tyr	Ile	Tyr	Thr	Ser	Gly	Thr
			100					105						110	
Thr	Gly	Leu	Pro	Lys	Ala	Ala	Ile	Val	Val	His	Ser	Arg	Tyr	Tyr	Arg
			115				120					125			
Met	Ala	Ser	Leu	Val	Tyr	Tyr	Gly	Phe	Arg	Met	Arg	Pro	Asp	Asp	Ile
			130			135					140				
Val	Tyr	Asp	Cys	Leu	Pro	Leu	Tyr	His	Ser	Ser	Arg	Lys	His	Arg	Gly
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Asp	Trp	Gln	Cys	Leu	Leu	His	Gly	Met	Thr	Val	Val	Ile	Arg	Lys	Lys
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Phe	Ser	Ala	Ser	Arg	Phe	Trp	Asp	Asp	Cys	Ile	Lys	Tyr	Asn	Cys	Thr
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Pro	Arg	Glu	Ala	Glu	Ser	Arg	His	Lys	Val	Arg	Met	Ala	Leu	Gly	Asn
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Pro	Gln	Val	Ala	Glu	Phe	Tyr	Gly	Ala	Thr	Glu	Cys	Asn	Cys	Ser	Leu
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		260					265						270		
Leu	Ser	Phe	Val	Tyr	Pro	Ile	Arg	Leu	Val	Arg	Val	Asn	Glu	Asp	Thr
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Met	Glu	Leu	Ile	Arg	Gly	Pro	Asp	Gly	Val	Cys	Ile	Pro	Cys	Gln	Pro
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Arg	Arg	Phe	Asp	Gly	Tyr	Leu	Asn	Gln	Gly	Ala	Asn	Asn	Lys	Lys	Ile
			325						330					335	
Ala	Asn	Asp	Val	Phe	Lys	Lys	Gly	Asp	Gln	Ala	Tyr	Leu	Thr	Gly	Asp
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Val	Leu	Val	Met	Asp	Glu	Leu	Gly	Tyr	Leu	Tyr	Phe	Arg	Asp	Arg	Thr
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Glu	Gly	Thr	Leu	Ser	Arg	Leu	Leu	His	Met	Ala	Asp	Val	Ala	Val	Tyr
385					390					395					400
Gly	Val	Glu	Val	Pro	Gly	Thr	Glu	Gly	Arg	Ala	Gly	Met	Ala	Ala	Val
			405					410						415	
Ala	Ser	Pro	Ile	Ser	Asn	Cys	Asp	Leu	Glu	Ser	Phe	Ala	Gln	Thr	Leu
			420					425					430		
Lys	Lys	Glu	Leu	Pro	Leu	Tyr	Ala	Arg	Pro	Ile	Phe	Leu	Arg	Phe	Leu
		435					440					445			
Pro	Glu	Leu	His	Lys	Thr	Gly	Thr	Phe	Lys	Phe	Gln	Lys	Thr	Glu	Leu
		450				455					460				
Arg	Lys	Glu	Gly	Phe	Asp	Pro	Ser	Val	Val	Lys	Asp	Pro	Leu	Phe	Tyr
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 Thr Arg Ile Gln Ala Gly Glu Glu Lys Leu  
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<210> 10  
 <211> 2277  
 <212> DNA  
 <213> Mus musculus

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 gccttgctgct gcttggcctt gcattgctgg gcagaccctg gatcagctcc tggatgcccc 240  
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 cagggctacg ctggctgcat aaagatgtgg ctttcacctt caagatgctt ttctatggcc 360  
 taaagtctag gcgacgcctt aacaaacatc cttccagagac ctttgtggat gcttttagagc 420  
 ggcaagcact ggcattggcct gaccgggtgg ccttggtgtg tactgggtct gagggctcct 480  
 caatcacaaa tagccagctg gatgccaggt cctgtcaggc agcatgggtc ctgaaagcaa 540  
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 caaagccagc catcttatca catgagcggg tcatacaagt gagcaacgtg ctgtccttct 1020  
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 ctccctggga gacttttgat gggcagaagc tataccagca tgtccgctcc tggctccctg 1920  
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 ctgtgtgtga aggaacctgg aatctctgac cacctagcca actggaaggc aatccaaaag 2160  
 tgtagagatt gacactagtc agcttcacaa agttgtccgg gttccagatg cccatggccc 2220  
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<210> 11  
 <211> 662  
 <212> PRT  
 <213> Mus musculus

<400> 11  
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Pro	His	Trp	Leu	Ser	Leu	Val	Gly	Ala	Ala	Leu	Thr	Leu	Phe	Leu	Leu
		35					40					45			
Pro	Leu	Gln	Pro	Pro	Pro	Gly	Leu	Arg	Trp	Leu	His	Lys	Asp	Val	Ala
		50				55					60				
Phe	Thr	Phe	Lys	Met	Leu	Phe	Tyr	Gly	Leu	Lys	Phe	Arg	Arg	Arg	Leu
65					70					75					80
Asn	Lys	His	Pro	Pro	Glu	Thr	Phe	Val	Asp	Ala	Leu	Glu	Arg	Gln	Ala
				85					90					95	
Leu	Ala	Trp	Pro	Asp	Arg	Val	Ala	Leu	Val	Cys	Thr	Gly	Ser	Glu	Gly
			100					105					110		
Ser	Ser	Ile	Thr	Asn	Ser	Gln	Leu	Asp	Ala	Arg	Ser	Cys	Gln	Ala	Ala
		115					120					125			
Trp	Val	Leu	Lys	Ala	Lys	Leu	Lys	Asp	Ala	Val	Ile	Gln	Asn	Thr	Arg
	130					135					140				
Asp	Ala	Ala	Ala	Ile	Leu	Val	Leu	Pro	Ser	Lys	Thr	Ile	Ser	Ala	Leu
145					150					155					160
Ser	Val	Phe	Leu	Gly	Leu	Ala	Lys	Leu	Gly	Cys	Pro	Val	Ala	Trp	Ile
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Gly	Ala	Ser	Val	Leu	Ile	Val	Asp	Pro	Asp	Leu	Gln	Glu	Asn	Leu	Glu
	195						200					205			
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	210					215					220				
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225					230					235					240
Asp	Ala	Ala	Pro	Ser	Asp	Pro	Val	Pro	Ala	Ser	Leu	Arg	Ala	Thr	Ile
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Lys	Trp	Lys	Ser	Pro	Ala	Ile	Phe	Ile	Phe	Thr	Ser	Gly	Thr	Thr	Gly
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Leu	Pro	Lys	Pro	Ala	Ile	Leu	Ser	His	Glu	Arg	Val	Ile	Gln	Val	Ser
	275						280					285			
Asn	Val	Leu	Ser	Phe	Cys	Gly	Cys	Arg	Ala	Asp	Asp	Val	Val	Tyr	Asp
	290					295				300					
Val	Leu	Pro	Leu	Tyr	His	Thr	Ile	Gly	Leu	Val	Leu	Gly	Phe	Leu	Gly
305					310					315					320
Cys	Leu	Gln	Val	Gly	Ala	Thr	Cys	Val	Leu	Ala	Pro	Lys	Phe	Ser	Ala
			325						330					335	
Ser	Arg	Phe	Trp	Ala	Glu	Cys	Arg	Gln	His	Gly	Val	Thr	Val	Ile	Leu
		340						345					350		
Tyr	Val	Gly	Glu	Ile	Leu	Arg	Tyr	Leu	Cys	Asn	Val	Pro	Glu	Gln	Pro
	355						360					365			
Glu	Asp	Lys	Ile	His	Thr	Val	Arg	Leu	Ala	Met	Gly	Thr	Gly	Leu	Arg
	370					375					380				
Ala	Asn	Val	Trp	Lys	Asn	Phe	Gln	Gln	Arg	Phe	Gly	Pro	Ile	Arg	Ile
385					390					395					400
Trp	Glu	Phe	Tyr	Gly	Ser	Thr	Glu	Gly	Asn	Val	Gly	Leu	Met	Asn	Tyr
			405						410					415	
Val	Gly	His	Cys	Gly	Ala	Val	Gly	Arg	Thr	Ser	Cys	Ile	Leu	Arg	Met
		420						425					430		
Leu	Thr	Pro	Phe	Glu	Leu	Val	Gln	Phe	Asp	Ile	Glu	Thr	Ala	Glu	Pro
	435						440					445			
Leu	Arg	Asp	Lys	Gln	Gly	Phe	Cys	Ile	Pro	Val	Glu	Pro	Gly	Lys	Pro
	450					455					460				
Gly	Leu	Leu	Leu	Thr	Lys	Val	Arg	Lys	Asn	Gln	Pro	Phe	Leu	Gly	Tyr
465					470					475					480

Arg Gly Ser Gln Ala Glu Ser Asn Arg Lys Leu Val Ala Asn Val Arg  
 485 490 495  
 Arg Val Gly Asp Leu Tyr Phe Asn Thr Gly Asp Val Leu Thr Leu Asp  
 500 505 510  
 Gln Glu Gly Phe Phe Tyr Phe Gln Asp Arg Leu Gly Asp Thr Phe Arg  
 515 520 525  
 Trp Lys Gly Glu Asn Val Ser Thr Gly Glu Val Glu Cys Val Leu Ser  
 530 535 540  
 Ser Leu Asp Phe Leu Glu Val Asn Val Tyr Gly Val Pro Val Pro  
 545 550 555 560  
 Gly Cys Glu Gly Lys Val Gly Met Ala Ala Val Lys Leu Ala Pro Gly  
 565 570 575  
 Lys Thr Phe Asp Gly Gln Lys Leu Tyr Gln His Val Arg Ser Trp Leu  
 580 585 590  
 Pro Ala Tyr Ala Thr Pro His Phe Ile Arg Ile Gln Asp Ser Leu Glu  
 595 600 605  
 Ile Thr Asn Thr Tyr Lys Leu Val Lys Ser Arg Leu Val Arg Glu Gly  
 610 615 620  
 Phe Asp Val Gly Ile Ile Ala Asp Pro Leu Tyr Ile Leu Asp Asn Lys  
 625 630 635 640  
 Ala Gln Thr Phe Arg Ser Leu Met Pro Asp Val Tyr Gln Ala Val Cys  
 645 650 655  
 Glu Gly Thr Trp Asn Leu  
 660

<210> 12  
 <211> 1622  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> misc\_feature  
 <222> (1)...(1622)  
 <223> n = A,T,C or G

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 caggtcttcc aaaagcagcc atgatcactc atcagcgcac atggtatgga actggcctca 180  
 cttttgtaag cggattgaag gcagatgatg tcatctatat cactctgccc ttttaccaca 240  
 gtgctgcact actgattggc attcacggat gtattgtggc tgggtgctact cttgccttgc 300  
 ggactaaatt ttcagccagc cagttttggg atgactgcag aaaatacaac gtcactgtca 360  
 ttcagtatat cgggtgaactg cttcgggtatt tatgcaactc accacagaaa ccaaatgacc 420  
 gtgatcataa agtgagactg gcactgggaa atggcttacg aggagatgtg tggagacaat 480  
 ttgtcaagag atttggggac atatgcatct atgagttcta tgetgccact gaaggcaata 540  
 ttggatttat gaattatgag agaaaagtgt gtgctgttgg aagagtaaac tacctacaga 600  
 aaaaaatcat aacttatgac ctgattaaat atgatgtgga gaaagatgaa cctgtccgtg 660  
 atgaaaatgg atattgcgtc agagttccca aagggtgaagt tggacttctg gtttgcaaaa 720  
 tcacacaact tacaccattt aatggctatg ctggagcaaa ggctcagaca gagaagaaaa 780  
 aactgagaga tgtctttaag aaaggagacc tctatttcaa cagtggagat ctcttaatgg 840  
 ttgaccatga aaatttcac tatttccacg acagagttgg agatacattc cgggtggaaag 900  
 gggaaaatgt ggccaccact gaagttgctg atatagttgg actgggtgat tttttccaa 960  
 ggaagtaaaa tgtttatggg agtgcattgg ccaagatnat ggaggttcga attggcatgg 1020  
 cnttcnttc aaaatggaaa gaaaaccatg gaatttgatg gaaagaaatt ttttcagnac 1080  
 attgctgata accnacctag ttatgcaagg ccccggtttt ntaagaanac aggacaccat 1140  
 tgagatcact ggaattttta aacaccgcaa aatgaccttt ggtggaggag ggctttaacc 1200  
 cngctgtcat caaagatgcc ttgtattttc ttggatgaca cagcaaaaat gtatgtgcct 1260  
 atgactgagg acatntataa tgccataagt gntaaaacc tgaaattntg aatattccca 1320  
 ggaggataat tcaacatttc cagaaagaaa ctgaatggac agccacttga tataatccaa 1380

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ctttaatttg attgaagatt gtgaggaaat tttgtaggaa atttgcatac ccgtaaaggg 1440
agactttttt aaataacagt tgagtctttg caagtaaaaa gatttagaga ttattatttt 1500
tcagtgtgca cctactgttt gtatttgcaa actgagcttg ttggagggaa ggcattattt 1560
tttaaaatac ttagtaaatt aaagaacacc aacatgtgaa aaaaaaaaaa aaaaaaaaaa 1620
aa 1622

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<210> 13
<211> 286
<212> PRT
<213> Homo sapiens

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<400> 13
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20 25 30
Leu Lys Ala Asp Asp Val Ile Tyr Ile Thr Leu Pro Phe Tyr His Ser
35 40 45
Ala Ala Leu Leu Ile Gly Ile His Gly Cys Ile Val Ala Gly Ala Thr
50 55 60
Leu Ala Leu Arg Thr Lys Phe Ser Ala Ser Gln Phe Trp Asp Asp Cys
65 70 75 80
Arg Lys Tyr Asn Val Thr Val Ile Gln Tyr Ile Gly Glu Leu Leu Arg
85 90 95
Tyr Leu Cys Asn Ser Pro Gln Lys Pro Asn Asp Arg Asp His Lys Val
100 105 110
Arg Leu Ala Leu Gly Asn Gly Leu Arg Gly Asp Val Trp Arg Gln Phe
115 120 125
Val Lys Arg Phe Gly Asp Ile Cys Ile Tyr Glu Phe Tyr Ala Ala Thr
130 135 140
Glu Gly Asn Ile Gly Phe Met Asn Tyr Ala Arg Lys Val Gly Ala Val
145 150 155 160
Gly Arg Val Asn Tyr Leu Gln Lys Lys Ile Ile Thr Tyr Asp Leu Ile
165 170 175
Lys Tyr Asp Val Glu Lys Asp Glu Pro Val Arg Asp Glu Asn Gly Tyr
180 185 190
Cys Val Arg Val Pro Lys Gly Glu Val Gly Leu Leu Val Cys Lys Ile
195 200 205
Thr Gln Leu Thr Pro Phe Asn Gly Tyr Ala Gly Ala Lys Ala Gln Thr
210 215 220
Glu Lys Lys Lys Leu Arg Asp Val Phe Lys Lys Gly Asp Leu Tyr Phe
225 230 235 240
Asn Ser Gly Asp Leu Leu Met Val Asp His Glu Asn Phe Ile Tyr Phe
245 250 255
His Asp Arg Val Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala
260 265 270
Thr Thr Glu Val Ala Asp Ile Val Gly Leu Val Asp Phe Phe
275 280 285

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<210> 14
<211> 753
<212> DNA
<213> Homo sapiens

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<400> 14
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gatgaccaag gttttctccg cttccatgat cgtactggag acaccttcag gtggaaaggg 180
gagaatgtgg ccacaaccga ggtggcagag gtcttcgagg ccctagattt tcttcaggag 240

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gtgaacgtct atggagtcac tgtgccaggg catgaaggca gggctggaat ggcagcccta 300
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accttcaaac agcagaaagt tcggatggca aatgagggct tcgacccag caccctgtct 480
gacctactgt acgttctgga ccaggctgta ggtgcctacc tgcccctcac aactgcccgg 540
tacagcgccc tcttggcagg aaaccttcga atctgagaac ttccacacct gaggcacctg 600
agagaggaac tctgtggggg gggggccggt gcaggtgtac tgggctgtca gggatctttt 660
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tctgacctac aaaaaaaaaa aaaaaaaaaa aaa 753

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<210> 15
<211> 191
<212> PRT
<213> Homo sapiens

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<400> 15
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Gln Gly Lys Leu Leu Lys Asp Val Phe Arg Pro Gly Asp Val Phe Phe
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Asn Thr Gly Asp Leu Leu Val Cys Asp Asp Gln Gly Phe Leu Arg Phe
35 40 45
His Asp Arg Thr Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala
50 55 60
Thr Thr Glu Val Ala Glu Val Phe Glu Ala Leu Asp Phe Leu Gln Glu
65 70 75 80
Val Asn Val Tyr Gly Val Thr Val Pro Gly His Glu Gly Arg Ala Gly
85 90 95
Met Ala Ala Leu Val Leu Arg Pro Pro His Ala Leu Asp Leu Met Gln
100 105 110
Leu Tyr Thr His Val Ser Glu Asn Leu Pro Pro Tyr Ala Arg Pro Arg
115 120 125
Phe Leu Arg Leu Gln Glu Ser Leu Ala Thr Thr Glu Thr Phe Lys Gln
130 135 140
Gln Lys Val Arg Met Ala Asn Glu Gly Phe Asp Pro Ser Thr Leu Ser
145 150 155 160
Asp Pro Leu Tyr Val Leu Asp Gln Ala Val Gly Ala Tyr Leu Pro Leu
165 170 175
Thr Thr Ala Arg Tyr Ser Ala Leu Leu Ala Gly Asn Leu Arg Ile
180 185 190

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<210> 16
<211> 734
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<222> (1)...(734)
<223> n = A,T,C or G

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gcagtccatc tggaccaact tttccagccg cttccacata ccccagggtg ctgagttyta 180
cggggccaca gagtgaact gtagcctggg caacttcgac agccagggtg gggcctgttg 240
tttcaatagc cgcatacctgt ccttcgtgta ccccatccgg ttggtacgtg tcaacgagga 300
caccatggag ctgatccggg gggccgacgg cgtctgcatt ccctgccagc caggtgagcc 360
gggccagctg gtggggccgca tcatccagaa agaccccctg cgccgcttcg atggctacct 420

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caaccagggc	gccaacaaca	agaagattgc	caaggatgtc	ttcaagaagg	gggaccaggg	480
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cactggggac	acgttccgct	ggaaagggtga	gaacgtgtcc	accaccgagg	tggaaggcac	600
actcagccgc	ctgctggaca	tggctgacgt	ggccgtgtat	ggtgtcgagg	tgccaggaac	660
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<210> 17  
 <211> 213  
 <212> PRT  
 <213> Homo sapiens

<400> 17

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			20					25					30		
Ser	Ile	Trp	Thr	Asn	Phe	Ser	Ser	Arg	Phe	His	Ile	Pro	Gln	Val	Ala
		35					40					45			
Glu	Phe	Tyr	Gly	Ala	Thr	Glu	Cys	Asn	Cys	Ser	Leu	Gly	Asn	Phe	Asp
	50					55					60				
Ser	Gln	Val	Gly	Ala	Cys	Gly	Phe	Asn	Ser	Arg	Ile	Leu	Ser	Phe	Val
65				70				75						80	
Tyr	Pro	Ile	Arg	Leu	Val	Arg	Val	Asn	Glu	Asp	Thr	Met	Glu	Leu	Ile
				85				90						95	
Arg	Gly	Pro	Asp	Gly	Val	Cys	Ile	Pro	Cys	Gln	Pro	Gly	Glu	Pro	Gly
			100					105					110		
Gln	Leu	Val	Gly	Arg	Ile	Ile	Gln	Lys	Asp	Pro	Leu	Arg	Arg	Phe	Asp
	115					120						125			
Gly	Tyr	Leu	Asn	Gln	Gly	Ala	Asn	Asn	Lys	Lys	Ile	Ala	Lys	Asp	Val
	130				135						140				
Phe	Lys	Lys	Gly	Asp	Gln	Ala	Tyr	Leu	Thr	Gly	Asp	Val	Leu	Val	Met
145				150						155				160	
Asp	Glu	Leu	Gly	Tyr	Leu	Tyr	Phe	Arg	Asp	Arg	Thr	Gly	Asp	Thr	Phe
				165				170						175	
Arg	Trp	Lys	Gly	Glu	Asn	Val	Ser	Thr	Thr	Glu	Val	Glu	Gly	Thr	Leu
			180				185						190		
Ser	Arg	Leu	Leu	Asp	Met	Ala	Asp	Val	Ala	Val	Tyr	Gly	Val	Glu	Val
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Pro	Gly	Thr	Glu	Gly											
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<210> 18  
 <211> 1278  
 <212> DNA  
 <213> Homo sapiens

<220>  
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ccccagcaac	cagaggaccg	gacacatata	gtccgcctgg	caatgggcaa	tgactacgg	240
gctgatgtgt	ggggagacct	tccagcagcg	tttcggctct	atttcggatc	tngggaagtc	300
ttacgggcty	ccacagaagg	gcaacatggg	gcttttagttc	aactattgtt	gggggcgctg	360

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cggttggtgc	gtgagggcct	caatgtgggg	atcgtgggtg	accctctgtt	tgtactggac	1020
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cacccaaca	cactcgggtg	ccctttcatc	ctgggcctgt	gtgaatccca	gcctggccat	1200
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 <211> 199  
 <212> PRT  
 <213> Homo sapiens

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Gly	Pro	Gly	Gly	Lys	Asp	Gly	Ala	Cys	Leu	Leu	Arg	Met	Leu	Ser	Pro
			20					25					30		
Phe	Glu	Leu	Val	Gln	Phe	Asp	Met	Glu	Ala	Ala	Glu	Pro	Val	Arg	Asp
			35				40					45			
Asn	Gln	Gly	Phe	Cys	Ile	Pro	Val	Gly	Leu	Gly	Glu	Pro	Gly	Leu	Leu
			50				55				60				
Leu	Thr	Lys	Val	Val	Ser	Gln	Gln	Pro	Phe	Val	Gly	Tyr	Arg	Gly	Pro
65						70				75				80	
Arg	Glu	Leu	Ser	Glu	Arg	Lys	Leu	Val	Arg	Asn	Val	Arg	Gln	Ser	Gly
				85				90						95	
Asp	Val	Tyr	Tyr	Asn	Thr	Gly	Asp	Val	Leu	Ala	Met	Asp	Arg	Glu	Gly
				100				105					110		
Phe	Leu	Tyr	Phe	Arg	Asp	Arg	Leu	Gly	Asp	Thr	Phe	Arg	Trp	Lys	Gly
				115				120				125			
Glu	Asn	Val	Ser	Thr	His	Glu	Val	Glu	Gly	Val	Leu	Ser	Gln	Val	Asp
						135					140				
Phe	Leu	Gln	Gln	Val	Asn	Val	Tyr	Gly	Val	Cys	Val	Pro	Gly	Cys	Glu
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Gly	Lys	Val	Gly	Met	Ala	Ala	Val	Ala	Leu	Ala	Pro	Gly	Gln	Thr	Phe
				165				170					175		
Asp	Gly	Glu	Lys	Leu	Tyr	Gln	His	Val	Arg	Ala	Trp	Leu	Pro	Ala	Tyr
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Ala	Thr	Pro	His	Phe	Ile	Arg									
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 <212> DNA  
 <213> Homo sapiens

<400> 20						
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tgatgtgact	gtgtttcagt	atattggaga	actttgtcgc	tacctttgca	aacaatctaa	120
gagagaagga	gaaaaggatc	ataaggtgcg	tttggcaatt	ggaaatggca	tacggagtga	180



tgtatggaga	gaatttttag	acagatttgg	aaatataaag	gtgtgtgaac	tttatgcagc	240
taccgaatca	agcatatctt	tcatgaacta	cactgggaga	attggagcaa	ttgggagaac	300
aaatttgttt	tacaaacttc	tttccacttt	tgacttaata	aagtatgact	ttcagaaaga	360
tgaacccatg	agaaatgagc	agggttgggt	attcatgaga	aaaaggagac	ctggacttct	420
catttctcga	gtgaatgcaa	aaaatccctt	ctttggctat	gctgggcctt	ataagcacac	480
aaaagacaaa	ttgctttgtg	atgtttttta	gaagggagat	gtttacctta	atactggaga	540
cttaatagtc	caggatcagg	acaatttcct	ttatttttgg	gaccgtactg	gagacacttt	600
cagatggaaa	ggagaaaatg	tcgcaaccac	tgaggttgct	gatgttattg	gaatgttgga	660
tttcatacag	gaagcaaacg	tctatgggtg	ggctatatca	ggttatgaag	gaagagcagg	720
aatggcttct	attattttta	aaccaaatac	atcttttagat	ttggaaaaag	tttatgaaca	780
agttgtaaca	tttctaccag	cttatgcttg	tccacgattt	ttaagaattc	aggaaaaaat	840
ggaagcaaca	ggaacattca	aactattgaa	gcatacgttg	gtggaagatg	gatttaatcc	900
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gaccagggaa	ctttatgatc	aaataatgtt	aggggaaata	aaactttaag	atttttatat	1020
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attttttaat	tgcataagaa	ttttaatttc	ttttaattga	tataaacaga	gttgattatt	1200
ctttttatct	atttggagat	tcagtgcata	actaagtatt	ttccttaata	ctaaagattt	1260
taaataataa	atagtggcta	gcggtttgga	caatcactaa	aatgtactt	tctaataagt	1320
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<210> 21  
 <211> 335  
 <212> PRT  
 <213> Homo sapiens

<400> 21

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			20					25					30		
Arg	Tyr	Leu	Cys	Lys	Gln	Ser	Lys	Arg	Glu	Gly	Glu	Lys	Asp	His	Lys
		35					40					45			
Val	Arg	Leu	Ala	Ile	Gly	Asn	Gly	Ile	Arg	Ser	Asp	Val	Trp	Arg	Glu
		50				55					60				
Phe	Leu	Asp	Arg	Phe	Gly	Asn	Ile	Lys	Val	Cys	Glu	Leu	Tyr	Ala	Ala
65					70					75				80	
Thr	Glu	Ser	Ser	Ile	Ser	Phe	Met	Asn	Tyr	Thr	Gly	Arg	Ile	Gly	Ala
			85					90					95		
Ile	Gly	Arg	Thr	Asn	Leu	Phe	Tyr	Lys	Leu	Leu	Ser	Thr	Phe	Asp	Leu
			100					105					110		
Ile	Lys	Tyr	Asp	Phe	Gln	Lys	Asp	Glu	Pro	Met	Arg	Asn	Glu	Gln	Gly
		115					120					125			
Trp	Val	Phe	Met	Arg	Lys	Arg	Arg	Pro	Gly	Leu	Leu	Ile	Ser	Arg	Val
		130				135					140				
Asn	Ala	Lys	Asn	Pro	Phe	Phe	Gly	Tyr	Ala	Gly	Pro	Tyr	Lys	His	Thr
145					150					155				160	
Lys	Asp	Lys	Leu	Leu	Cys	Asp	Val	Phe	Lys	Lys	Gly	Asp	Val	Tyr	Leu
			165						170					175	
Asn	Thr	Gly	Asp	Leu	Ile	Val	Gln	Asp	Gln	Asp	Asn	Phe	Leu	Tyr	Phe
		180						185					190		
Trp	Asp	Arg	Thr	Gly	Asp	Thr	Phe	Arg	Trp	Lys	Gly	Glu	Asn	Val	Ala
		195					200					205			
Thr	Thr	Glu	Val	Ala	Asp	Val	Ile	Gly	Met	Leu	Asp	Phe	Ile	Gln	Glu
		210				215					220				
Ala	Asn	Val	Tyr	Gly	Val	Ala	Ile	Ser	Gly	Tyr	Glu	Gly	Arg	Ala	Gly
225					230					235				240	
Met	Ala	Ser	Ile	Ile	Leu	Lys	Pro	Asn	Thr	Ser	Leu	Asp	Leu	Glu	Lys
				245					250					255	

Val Tyr Glu Gln Val Val Thr Phe Leu Pro Ala Tyr Ala Cys Pro Arg  
 260 265 270  
 Phe Leu Arg Ile Gln Glu Lys Met Glu Ala Thr Gly Thr Phe Lys Leu  
 275 280 285  
 Leu Lys His Gln Leu Val Glu Asp Gly Phe Asn Pro Leu Lys Ile Ser  
 290 295 300  
 Glu Pro Leu Tyr Phe Met Asp Asn Leu Lys Lys Ser Tyr Val Leu Leu  
 305 310 315 320  
 Thr Arg Glu Leu Tyr Asp Gln Ile Met Leu Gly Glu Ile Lys Leu  
 325 330 335

<210> 22  
 <211> 2007  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 22  
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<210> 23  
 <211> 597  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 23

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Arg	Gly	Ala	Met	Thr	Gly	Leu	Leu	Ala	Arg	Pro	Asn	Ser	Lys	Ala	Ser	35	40	45	
Ile	Gly	Thr	Val	Phe	Gln	Asp	Arg	Ala	Ala	Arg	Tyr	Gly	Asp	Arg	Val	50	55	60	
Phe	Leu	Lys	Phe	Gly	Asp	Gln	Gln	Leu	Thr	Tyr	Arg	Asp	Ala	Asn	Ala	65	70	75	80
Thr	Ala	Asn	Arg	Tyr	Ala	Ala	Val	Leu	Ala	Ala	Arg	Gly	Val	Gly	Pro	85	90	95	
Gly	Asp	Val	Val	Gly	Ile	Met	Leu	Arg	Asn	Ser	Pro	Ser	Thr	Val	Leu	100	105	110	
Ala	Met	Leu	Ala	Thr	Val	Lys	Cys	Gly	Ala	Ile	Ala	Gly	Met	Leu	Asn	115	120	125	
Tyr	His	Gln	Arg	Gly	Glu	Val	Leu	Ala	His	Ser	Leu	Gly	Leu	Leu	Asp	130	135	140	
Ala	Lys	Val	Leu	Ile	Ala	Glu	Ser	Asp	Leu	Val	Ser	Ala	Val	Ala	Glu	145	150	155	160
Cys	Gly	Ala	Ser	Arg	Gly	Arg	Val	Ala	Gly	Asp	Val	Leu	Thr	Val	Glu	165	170	175	
Asp	Val	Glu	Arg	Phe	Ala	Thr	Thr	Ala	Pro	Ala	Thr	Asn	Pro	Ala	Ser	180	185	190	
Ala	Ser	Ala	Val	Gln	Ala	Lys	Asp	Thr	Ala	Phe	Tyr	Ile	Phe	Thr	Ser	195	200	205	
Gly	Thr	Thr	Gly	Phe	Pro	Lys	Ala	Ser	Val	Met	Thr	His	His	Arg	Trp	210	215	220	
Leu	Arg	Ala	Leu	Ala	Val	Phe	Gly	Gly	Met	Gly	Leu	Arg	Leu	Lys	Gly	225	230	235	240
Ser	Asp	Thr	Leu	Tyr	Ser	Cys	Leu	Pro	Leu	Tyr	His	Asn	Asn	Ala	Leu	245	250	255	
Thr	Val	Ala	Val	Ser	Ser	Val	Ile	Asn	Ser	Gly	Ala	Thr	Leu	Ala	Leu	260	265	270	
Gly	Lys	Ser	Phe	Ser	Ala	Ser	Arg	Phe	Trp	Asp	Glu	Val	Ile	Ala	Asn	275	280	285	
Arg	Ala	Thr	Ala	Phe	Val	Tyr	Ile	Gly	Glu	Ile	Cys	Arg	Tyr	Leu	Leu	290	295	300	
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Cys	Gly	Asn	Gly	Leu	Arg	Pro	Glu	Ile	Trp	Asp	Glu	Phe	Thr	Thr	Arg	325	330	335	
Phe	Gly	Val	Ala	Arg	Val	Cys	Glu	Phe	Tyr	Ala	Ala	Ser	Glu	Gly	Asn	340	345	350	
Ser	Ala	Phe	Ile	Asn	Ile	Phe	Asn	Val	Pro	Arg	Thr	Ala	Gly	Val	Ser	355	360	365	
Pro	Met	Pro	Leu	Ala	Phe	Val	Glu	Tyr	Asp	Leu	Asp	Thr	Gly	Asp	Pro	370	375	380	
Leu	Arg	Asp	Ala	Ser	Gly	Arg	Val	Arg	Arg	Val	Pro	Asp	Gly	Glu	Pro	385	390	395	400
Gly	Leu	Leu	Leu	Ser	Arg	Val	Asn	Arg	Leu	Gln	Pro	Phe	Asp	Gly	Tyr	405	410	415	
Thr	Asp	Pro	Val	Ala	Ser	Glu	Lys	Lys	Leu	Val	Arg	Asn	Ala	Phe	Arg	420	425	430	
Asp	Gly	Asp	Cys	Trp	Phe	Asn	Thr	Gly	Asp	Val	Met	Ser	Pro	Gln	Gly	435	440	445	
Met	Gly	His	Ala	Ala	Phe	Val	Asp	Arg	Leu	Gly	Asp	Thr	Phe	Arg	Trp	450	455	460	

Lys Gly Glu Asn Val Ala Thr Thr Gln Val Glu Ala Ala Leu Ala Ser  
 465 470 475 480  
 Asp Gln Thr Val Glu Glu Cys Thr Val Tyr Gly Val Gln Ile Pro Arg  
 485 490 495  
 Thr Gly Gly Arg Ala Gly Met Ala Ala Ile Thr Leu Arg Ala Gly Ala  
 500 505 510  
 Glu Phe Asp Gly Gln Ala Leu Ala Arg Thr Val Tyr Gly His Leu Pro  
 515 520 525  
 Gly Tyr Ala Leu Pro Leu Phe Val Arg Val Val Gly Ser Leu Ala His  
 530 535 540  
 Thr Thr Thr Phe Lys Ser Arg Lys Val Glu Leu Arg Asn Gln Ala Tyr  
 545 550 555 560  
 Gly Ala Asp Ile Glu Asp Pro Leu Tyr Val Leu Ala Gly Pro Asp Glu  
 565 570 575  
 Gly Tyr Val Pro Tyr Tyr Ala Glu Tyr Pro Glu Glu Val Ser Leu Gly  
 580 585 590  
 Arg Arg Pro Gln Gly  
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<210> 24  
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 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (175)...(2112)

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 cctgcctcct gcctgagctt ctgggagact gaaggcacgg cttgcagctt cagg atg 177  
 Met  
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 cgg gct ccg ggt gcg ggc gcg gcc tcg gtg gtc tcg ctg gcg ctg ttg 225  
 Arg Ala Pro Gly Ala Gly Ala Ala Ser Val Val Ser Leu Ala Leu Leu  
 5 10 15  
 tgg ctg ctg ggg ctg ccg tgg acc tgg agc gcg gca gcg gcg ctc ggc 273  
 Trp Leu Leu Gly Leu Pro Trp Thr Trp Ser Ala Ala Ala Ala Leu Gly  
 20 25 30  
 gtg tac gtg ggc agc ggc ggc tgg cgc ttc ctg cgc atc gtc tgc aag 321  
 Val Tyr Val Gly Ser Gly Gly Trp Arg Phe Leu Arg Ile Val Cys Lys  
 35 40 45  
 acc gcg agg cga gac ctc ttc ggt ctc tct gtg ctg atc cgc gtg cgc 369  
 Thr Ala Arg Arg Asp Leu Phe Gly Leu Ser Val Leu Ile Arg Val Arg  
 50 55 60 65  
 ctg gag ctg ccg ccg cac cag cgt gcc ggc cac acc atc ccg cgc atc 417  
 Leu Glu Leu Arg Arg His Gln Arg Ala Gly His Thr Ile Pro Arg Ile  
 70 75 80  
 ttt cag gcg gta gtg cag cga cag ccc gag cgc ctg gcg ctg gtg gat 465  
 Phe Gln Ala Val Gln Arg Gln Pro Glu Arg Leu Ala Leu Val Asp  
 85 90 95  
 gcc ggg acc ggc gag tgc tgg acc ttt gcg cag ctg gac gcc tac tcc 513  
 Ala Gly Thr Gly Glu Cys Trp Thr Phe Ala Gln Leu Asp Ala Tyr Ser  
 100 105 110  
 aat gcg gta gcc aac ctc ttc cgc cag ctg ggc ttc gcg ccg ggc gac 561  
 Asn Ala Val Ala Asn Leu Phe Arg Gln Leu Gly Phe Ala Pro Gly Asp  
 115 120 125

gtg gtg gcc atc ttc ctg gag ggc cgg ccg gag ttc gtg ggg ctg tgg	609
Val Val Ala Ile Phe Leu Glu Gly Arg Pro Glu Phe Val Gly Leu Trp	
130 135 140 145	
ctg ggc ctg gcc aag gcg ggc atg gag gcc gcg ctg ctc aac gtg aac	657
Leu Gly Leu Ala Lys Ala Gly Met Glu Ala Ala Leu Leu Asn Val Asn	
150 155 160	
ctg cgg cgc gag ccc ctg gcc ttc tgc ctg ggc acc tcg ggc gct aag	705
Leu Arg Arg Glu Pro Leu Ala Phe Cys Leu Gly Thr Ser Gly Ala Lys	
165 170 175	
gcc ctg atc ttt gga gga gaa atg gtg gcg gcg gtg gcc gaa gtg agc	753
Ala Leu Ile Phe Gly Gly Glu Met Val Ala Ala Val Ala Glu Val Ser	
180 185 190	
ggg cat ctg ggg aaa agt ttg atc aag ttc tgc tct gga gac ttg ggg	801
Gly His Leu Gly Lys Ser Leu Ile Lys Phe Cys Ser Gly Asp Leu Gly	
195 200 205	
ccc gag ggc atc ttg ccg gac acc cac ctc ctg gac ccg ctg ctg aag	849
Pro Glu Gly Ile Leu Pro Asp Thr His Leu Leu Asp Pro Leu Leu Lys	
210 215 220 225	
gag gcc tct act gcc ccc ttg gca cag atc ccc agc aag ggc atg gac	897
Glu Ala Ser Thr Ala Pro Leu Ala Gln Ile Pro Ser Lys Gly Met Asp	
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Ala Ala Ile Val Val His Ser Arg Tyr Tyr Arg Met Ala Ala Phe Gly	
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His His Ala Tyr Arg Met Gln Ala Ala Asp Val Leu Tyr Asp Cys Leu	
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Ile Tyr Gly Leu Thr Val Val Leu Arg Lys Lys Phe Ser Ala Ser Arg	
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Phe Trp Asp Asp Cys Ile Lys Tyr Asn Cys Thr Val Val Gln Tyr Ile	
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Gly Glu Ile Cys Arg Tyr Leu Leu Lys Gln Pro Val Arg Glu Ala Glu	
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Lys Val Gly Ser Cys Gly Phe Asn Ser Arg Ile Leu Pro His Val Tyr	
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Pro Ile Arg Leu Val Lys Val Asn Glu Asp Thr Met Glu Leu Leu Arg	
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Thr Gly Thr Phe Lys Ile Gln Lys Thr Arg Leu Gln Arg Glu Gly Phe	
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Trp Leu Gly Leu Ala Lys Ala Gly Met Glu Ala Ala Leu Leu Asn Val
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Asn Leu Arg Arg Glu Pro Leu Ala Phe Cys Leu Gly Thr Ser Gly Ala
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Lys Ala Leu Ile Phe Gly Gly Glu Met Val Ala Ala Val Ala Glu Val
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Lys Glu Ala Ser Thr Ala Pro Leu Ala Gln Ile Pro Ser Lys Gly Met
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Asp Asp Arg Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly Leu Pro
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Lys Ala Ala Ile Val Val His Ser Arg Tyr Tyr Arg Met Ala Ala Phe
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Gly His His Ala Tyr Arg Met Gln Ala Ala Asp Val Leu Tyr Asp Cys
275     280     285
Leu Pro Leu Tyr His Ser Ala Gly Asn Ile Ile Gly Val Gly Gln Cys
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Leu Ile Tyr Gly Leu Thr Val Val Leu Arg Lys Lys Phe Ser Ala Ser
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Arg Phe Trp Asp Asp Cys Ile Lys Tyr Asn Cys Thr Val Val Gln Tyr
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Val	Leu	Leu	Phe	Ser	Lys	Leu	Val	Leu	Lys	Leu	Pro	Trp	Thr	Gln	Val	
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Val	Leu	Leu	Lys	Val	Lys	Ala	Lys	Val	Arg	Gln	Cys	Leu	Gln	Glu	Arg	
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Arg	Thr	Val	Pro	Ile	Leu	Phe	Ala	Ser	Thr	Val	Arg	Arg	His	Pro	Asp	
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Lys	Thr	Ala	Leu	Ile	Phe	Glu	Gly	Thr	Asp	Thr	His	Trp	Thr	Phe	Arg	
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Gln	Leu	Asp	Glu	Tyr	Ser	Ser	Ser	Val	Ala	Asn	Phe	Leu	Gln	Ala	Arg	
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Gly	Leu	Ala	Ser	Gly	Asp	Val	Ala	Ala	Ile	Phe	Met	Glu	Asn	Arg	Asn	
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Glu	Phe	Val	Gly	Leu	Trp	Leu	Gly	Met	Ala	Lys	Leu	Gly	Val	Glu	Ala	
		140					145					150				
gcc	ctc	atc	aac	acc	aac	ctg	cgg	cgg	gat	gct	ctg	ctc	cac	tgc	ctc	714
Ala	Leu	Ile	Asn	Thr	Asn	Leu	Arg	Arg	Asp	Ala	Leu	Leu	His	Cys	Leu	
	155				160						165					
acc	acc	tgc	cgc	gca	cgg	gcc	ctt	gtc	ttt	ggc	agc	gaa	atg	gcc	tca	762
Thr	Thr	Ser	Arg	Ala	Arg	Ala	Leu	Val	Phe	Gly	Ser	Glu	Met	Ala	Ser	
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Ala	Ile	Cys	Glu	Val	His	Ala	Ser	Leu	Asp	Pro	Ser	Leu	Ser	Leu	Phe	
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tgc	tct	ggc	tcc	tgg	gag	ccc	ggt	gcg	gtg	cct	cca	agc	aca	gaa	cac	858
Cys	Ser	Gly	Ser	Trp	Glu	Pro	Gly	Ala	Val	Pro	Pro	Ser	Thr	Glu	His	
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Leu	Asp	Pro	Leu	Leu	Lys	Asp	Ala	Pro	Lys	His	Leu	Pro	Ser	Cys	Pro	
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 Gly Met Ala Lys Leu Gly Val Glu Ala Ala Leu Ile Asn Thr Asn Leu  
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 Arg Arg Asp Ala Leu Leu His Cys Leu Thr Thr Ser Arg Ala Arg Ala  
 165 170 175  
 Leu Val Phe Gly Ser Glu Met Ala Ser Ala Ile Cys Glu Val His Ala  
 180 185 190  
 Ser Leu Asp Pro Ser Leu Ser Leu Phe Cys Ser Gly Ser Trp Glu Pro  
 195 200 205  
 Gly Ala Val Pro Pro Ser Thr Glu His Leu Asp Pro Leu Leu Lys Asp  
 210 215 220  
 Ala Pro Lys His Leu Pro Ser Cys Pro Asp Lys Gly Phe Thr Asp Lys  
 225 230 235 240  
 Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly Leu Pro Lys Ala Ala  
 245 250 255

Ile Val Val His Ser Arg Tyr Tyr Arg Met Ala Ala Leu Val Tyr Tyr  
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 Gly Phe Arg Met Arg Pro Asn Asp Ile Val Tyr Asp Cys Leu Pro Leu  
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 Tyr His Ser Ala Gly Asn Ile Val Gly Ile Gly Gln Cys Leu Leu His  
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 Gly Met Thr Val Val Ile Arg Lys Lys Phe Ser Ala Ser Arg Phe Trp  
 305 310 315 320  
 Asp Asp Cys Ile Lys Tyr Asn Cys Thr Ile Val Gln Tyr Ile Gly Glu  
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 His Gln Val Arg Met Ala Leu Gly Asn Gly Leu Arg Gln Ser Ile Trp  
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 Thr Asn Phe Ser Ser Arg Phe His Ile Pro Gln Val Ala Glu Phe Tyr  
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 Gly Tyr Leu Tyr Phe Arg Asp Arg Thr Gly Asp Thr Phe Arg Trp Lys  
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 Gly Glu Asn Val Ser Thr Thr Glu Val Glu Gly Thr Leu Ser Arg Leu  
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 Thr Tyr Lys Phe Gln Lys Thr Glu Leu Arg Lys Glu Gly Phe Asp Pro  
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 Glu Lys Leu

&lt;210&gt; 28

&lt;211&gt; 1941

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 28

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120

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&lt;210&gt; 29

&lt;211&gt; 1938

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;400&gt; 29

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<210> 30  
 <211> 1896  
 <212> DNA  
 <213> Homo sapiens

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<210> 31  
 <211> 1896  
 <212> DNA  
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<210> 32
<211> 646
<212> PRT
<213> Homo sapiens
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|         |         | <400> 32 |         |        |         |         |         |         |        |         |         |     |         |         |     |
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| Leu     | Trp     | Leu      | Leu 20  | Gly    | Leu     | Pro     | Trp     | Thr 25  | Trp    | Ser     | Ala     | Ala | Ala 30  | Ala     | Leu |
| Gly     | Val     | Tyr 35   | Val     | Gly    | Ser     | Gly     | Gly 40  | Trp     | Arg    | Phe     | Leu 45  | Arg | Ile     | Val     | Cys |
| Lys     | Thr 50  | Ala      | Arg     | Arg    | Asp     | Leu 55  | Phe     | Gly     | Leu    | Ser     | Val 60  | Leu | Ile     | Arg     | Val |
| Arg 65  | Leu     | Glu      | Leu     | Arg    | Arg 70  | His     | Gln     | Arg     | Ala    | Gly 75  | His     | Thr | Ile     | Pro 80  | Arg |
| Ile     | Phe     | Gln      | Ala     | Val 85 | Val     | Gln     | Arg     | Gln     | Pro 90 | Glu     | Arg     | Leu | Ala     | Leu 95  | Val |
| Asp     | Ala     | Gly      | Thr 100 | Gly    | Glu     | Cys     | Trp     | Thr 105 | Phe    | Ala     | Gln     | Leu | Asp 110 | Ala     | Tyr |
| Ser     | Asn     | Ala 115  | Val     | Ala    | Asn     | Leu     | Phe 120 | Arg     | Gln    | Leu     | Gly 125 | Phe | Ala     | Pro     | Gly |
| Asp     | Val 130 | Val      | Ala     | Ile    | Phe     | Leu 135 | Glu     | Gly     | Arg    | Pro     | Glu 140 | Phe | Val     | Gly     | Leu |
| Trp 145 | Leu     | Gly      | Leu     | Ala    | Lys 150 | Ala     | Gly     | Met     | Glu    | Ala 155 | Leu     | Leu | Leu     | Asn 160 | Val |
| Asn     | Leu     | Arg      | Arg     | Glu    | Pro     | Leu     | Ala     | Phe     | Cys    | Leu     | Gly     | Thr | Ser     | Gly     | Ala |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Lys | Ala | Leu | Ile | Phe | Gly | Gly | Glu | Met | Val | Ala | Ala | Val | Ala | Glu | Val |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Ser | Gly | His | Leu | Gly | Lys | Ser | Leu | Ile | Lys | Phe | Cys | Ser | Gly | Asp | Leu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Gly | Pro | Glu | Gly | Ile | Leu | Pro | Asp | Thr | His | Leu | Leu | Asp | Pro | Leu | Leu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Lys | Glu | Ala | Ser | Thr | Ala | Pro | Leu | Ala | Gln | Ile | Pro | Ser | Lys | Gly | Met |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ala | Phe |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Gly | His | His | Ala | Tyr | Arg | Met | Gln | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Ile | Gly | Val | Gly | Gln | Cys |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Leu | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Lys | Gln | Pro | Val | Arg | Glu | Ala |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Glu | Arg | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Glu | Arg | Phe | Gly | Val | Arg | Gln | Ile | Gly |
|     | 370 |     |     |     |     | 375 |     |     |     | 380 |     |     |     |     |     |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Pro | His | Val |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Leu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Arg | Asp | Ala | Gln | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Ala | Gly | Glu | Pro | Gly |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Gly | Tyr | Val | Ser | Glu | Ser | Ala | Thr | Ser | Lys | Lys | Ile | Ala | His | Ser | Val |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Phe | Ser | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Val | Leu |
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Ser Gly Ala Phe Ala Leu  
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<213> Mus musculus

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Cys Val Tyr Val Gly Gly Gly Gly Trp Arg Phe Leu Arg Ile Val Cys  
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Lys Thr Ala Arg Arg Asp Leu Phe Gly Leu Ser Val Leu Ile Arg Val  
50 55 60  
Arg Leu Glu Leu Arg Arg His Arg Arg Ala Gly Asp Thr Ile Pro Cys  
65 70 75 80  
Ile Phe Gln Ala Val Ala Arg Arg Gln Pro Glu Arg Leu Ala Leu Val  
85 90 95  
Asp Ala Ser Ser Gly Ile Cys Trp Thr Phe Ala Gln Leu Asp Thr Tyr  
100 105 110  
Ser Asn Ala Val Ala Asn Leu Phe Arg Gln Leu Gly Phe Ala Pro Gly  
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Asp Val Val Ala Val Phe Leu Glu Gly Arg Pro Glu Phe Val Gly Leu  
130 135 140  
Trp Leu Gly Leu Ala Lys Ala Gly Val Val Ala Ala Leu Leu Asn Val  
145 150 155 160  
Asn Leu Arg Arg Glu Pro Leu Ala Phe Cys Leu Gly Thr Ser Ala Ala  
165 170 175  
Lys Ala Leu Ile Tyr Gly Gly Glu Met Ala Ala Ala Val Ala Glu Val  
180 185 190  
Ser Glu Gln Leu Gly Lys Ser Leu Lys Phe Cys Ser Gly Asp Leu  
195 200 205  
Gly Pro Glu Ser Ile Leu Pro Asp Thr Gln Leu Leu Asp Pro Met Leu  
210 215 220  
Ala Glu Ala Pro Thr Thr Pro Leu Ala Gln Ala Pro Gly Lys Gly Met  
225 230 235 240  
Asp Asp Arg Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly Leu Pro  
245 250 255  
Lys Ala Ala Ile Val Val His Ser Arg Tyr Tyr Arg Ile Ala Ala Phe  
260 265 270  
Gly His His Ser Tyr Ser Met Arg Ala Ala Asp Val Leu Tyr Asp Cys  
275 280 285  
Leu Pro Leu Tyr His Ser Ala Gly Asn Ile Met Gly Val Gly Gln Cys  
290 295 300  
Val Ile Tyr Gly Leu Thr Val Val Leu Arg Lys Lys Phe Ser Ala Ser  
305 310 315 320  
Arg Phe Trp Asp Asp Cys Val Lys Tyr Asn Cys Thr Val Val Gln Tyr  
325 330 335  
Ile Gly Glu Ile Cys Arg Tyr Leu Leu Arg Gln Pro Val Arg Asp Val  
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Glu Gln Arg His Arg Val Arg Leu Ala Val Gly Asn Gly Leu Arg Pro  
355 360 365  
Ala Ile Trp Glu Glu Phe Thr Gln Arg Phe Gly Val Pro Gln Ile Gly  
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| Ser        | Leu        | Leu        | Phe<br>20  | Leu       | Tyr        | Leu        | Gly        | Ser<br>25  | Gly | Gly        | Trp        | Arg       | Phe<br>30  | Ile       | Arg        |
| Val        | Phe        | Ile<br>35  | Lys        | Thr       | Ile        | Arg        | Arg<br>40  | Asp        | Ile | Phe        | Gly        | Gly<br>45 | Leu        | Val       | Leu        |
| Leu<br>50  | Lys        | Val        | Lys        | Ala       | Lys        | Val<br>55  | Arg        | Gln        | Cys | Leu        | Gln<br>60  | Glu       | Arg        | Arg       | Thr        |
| Val<br>65  | Pro        | Ile        | Leu        | Phe<br>70 | Ala        | Ser        | Thr        | Val        | Arg | Arg<br>75  | His        | Pro       | Asp        | Lys<br>80 | Thr        |
| Ala        | Leu        | Ile        | Phe<br>85  | Glu       | Gly        | Thr        | Asp        | Thr<br>90  | His | Trp        | Thr        | Phe       | Arg<br>95  | Gln       | Leu        |
| Asp        | Glu        | Tyr        | Ser<br>100 | Ser       | Ser        | Val        | Ala        | Asn<br>105 | Phe | Leu        | Gln        | Ala       | Arg<br>110 | Gly       | Leu        |
| Ala        | Ser        | Gly<br>115 | Asp        | Val       | Ala        | Ala        | Ile<br>120 | Phe        | Met | Glu        | Asn<br>125 | Arg       | Asn<br>130 | Glu       | Phe        |
| Val        | Gly<br>130 | Leu        | Trp        | Leu       | Gly        | Met<br>135 | Ala        | Lys        | Leu | Gly<br>140 | Val        | Glu       | Ala        | Ala       | Leu        |
| Ile<br>145 | Asn        | Thr        | Asn        | Leu       | Arg<br>150 | Arg        | Asp        | Ala        | Leu | Leu<br>155 | His        | Cys       | Leu        | Thr       | Thr<br>160 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Ser | Arg | Ala | Arg | Ala | Leu | Val | Phe | Gly | Ser | Glu | Met | Ala | Ser | Ala | Ile |  |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     |     | 175 |  |  |
| Cys | Glu | Val | His | Ala | Ser | Leu | Asp | Pro | Ser | Leu | Ser | Leu | Phe | Cys | Ser |  |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |
| Gly | Ser | Trp | Glu | Pro | Gly | Ala | Val | Pro | Pro | Ser | Thr | Glu | His | Leu | Asp |  |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |
| Pro | Leu | Leu | Lys | Asp | Ala | Pro | Lys | His | Leu | Pro | Ser | Cys | Pro | Asp | Lys |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     |     | 220 |     |     |     |  |  |
| Gly | Phe | Thr | Asp | Lys | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |
| Leu | Pro | Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |  |
| Ala | Leu | Val | Tyr | Tyr | Gly | Phe | Arg | Met | Arg | Pro | Asn | Asp | Ile | Val | Tyr |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |  |
| Asp | Cys | Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Val | Gly | Ile | Gly |  |  |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |  |
| Gln | Cys | Leu | Leu | His | Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys | Phe | Ser |  |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     |     | 300 |     |     |     |  |  |
| Ala | Ser | Arg | Phe | Trp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Ile | Val |     |  |  |
| 305 |     |     |     |     | 310 |     |     |     | 315 |     |     |     |     | 320 |     |  |  |
| Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro | Pro | Arg |  |  |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     | 335 |     |     |  |  |
| Glu | Ala | Glu | Asn | Gln | His | Gln | Val | Arg | Met | Ala | Leu | Gly | Asn | Gly | Leu |  |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |  |
| Arg | Gln | Ser | Ile | Trp | Thr | Asn | Phe | Ser | Ser | Arg | Phe | His | Ile | Pro | Gln |  |  |
|     | 355 |     |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |  |
| Val | Ala | Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu | Gly | Asn |  |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |  |
| Phe | Asp | Ser | Gln | Val | Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Ser |  |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     | 400 |     |  |  |
| Phe | Val | Tyr | Pro | Ile | Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr | Met | Glu |  |  |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |  |  |
| Leu | Ile | Arg | Gly | Pro | Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Glu |  |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |  |
| Pro | Gly | Gln | Leu | Val | Gly | Arg | Ile | Gln | Lys | Asp | Pro | Leu | Arg | Arg |     |  |  |
|     | 435 |     |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |  |
| Phe | Asp | Gly | Tyr | Leu | Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile | Ala | Lys |  |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |  |
| Asp | Val | Phe | Lys | Lys | Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp | Val | Leu |  |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     | 480 |     |  |  |
| Val | Met | Asp | Glu | Leu | Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr | Gly | Asp |  |  |
|     |     |     | 485 |     |     |     |     |     | 490 |     |     |     |     | 495 |     |  |  |
| Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly |  |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |  |
| Thr | Leu | Ser | Arg | Leu | Leu | Asp | Met | Ala | Asp | Val | Ala | Val | Tyr | Gly | Val |  |  |
|     | 515 |     |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |  |
| Glu | Val | Pro | Gly | Thr | Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val | Ala | Ser |  |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |  |
| Pro | Thr | Gly | Asn | Cys | Asp | Leu | Glu | Arg | Phe | Ala | Gln | Val | Leu | Glu | Lys |  |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     | 560 |     |  |  |
| Glu | Leu | Pro | Leu | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Glu |  |  |
|     |     |     | 565 |     |     |     |     |     | 570 |     |     |     |     | 575 |     |  |  |
| Leu | His | Lys | Thr | Gly | Thr | Tyr | Lys | Phe | Gln | Lys | Thr | Glu | Leu | Arg | Lys |  |  |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |  |  |
| Glu | Gly | Phe | Asp | Pro | Ala | Ile | Val | Lys | Asp | Pro | Leu | Phe | Tyr | Leu | Asp |  |  |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |  |  |
| Ala | Gln | Lys | Gly | Arg | Tyr | Val | Pro | Leu | Asp | Gln | Glu | Ala | Tyr | Ser | Arg |  |  |
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Val Phe Ile Lys Thr Val Arg Arg Asp Ile Phe Gly Gly Met Val Leu  
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Leu Lys Val Lys Thr Lys Val Arg Arg Tyr Leu Gln Glu Arg Lys Thr  
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Val Pro Leu Leu Phe Ala Ser Met Val Gln Arg His Pro Asp Lys Thr  
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Ala Leu Ile Phe Glu Gly Thr Asp Thr His Trp Thr Phe Arg Gln Leu  
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Asp Glu Tyr Ser Ser Ser Val Ala Asn Phe Leu Gln Ala Arg Gly Leu  
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Ala Ser Gly Asn Val Val Ala Leu Phe Met Glu Asn Arg Asn Glu Phe  
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Ser Lys Ala Arg Ala Leu Ile Phe Gly Ser Glu Met Ala Ser Ala Ile  
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Cys Glu Ile His Ala Ser Leu Glu Pro Thr Leu Ser Leu Phe Cys Ser  
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Gly Ser Trp Glu Pro Ser Thr Val Pro Val Ser Thr Glu His Leu Asp  
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Pro Leu Leu Glu Asp Ala Pro Lys His Leu Pro Ser His Pro Asp Lys  
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Gly Phe Thr Asp Lys Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly  
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Ser Leu Val Tyr Tyr Gly Phe Arg Met Arg Pro Asp Asp Ile Val Tyr  
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Asp Cys Leu Pro Leu Tyr His Ser Ser Arg Lys His Arg Gly Asp Trp  
275 280 285  
Gln Cys Leu Leu His Gly Met Thr Val Val Ile Arg Lys Lys Phe Ser  
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Ala Ser Arg Phe Trp Asp Asp Cys Ile Lys Tyr Asn Cys Thr Val Val  
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Glu Ala Glu Ser Arg His Lys Val Arg Met Ala Leu Gly Asn Gly Leu  
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Arg Gln Ser Ile Trp Thr Asp Phe Ser Ser Arg Phe His Ile Pro Gln  
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Val Ala Glu Phe Tyr Gly Ala Thr Glu Cys Asn Cys Ser Leu Gly Asn  
370 375 380  
Phe Asp Ser Arg Val Gly Ala Cys Gly Phe Asn Ser Arg Ile Leu Ser  
385 390 395 400

Phe Val Tyr Pro Ile Arg Leu Val Arg Val Asn Glu Asp Thr Met Glu  
 405 410 415  
 Leu Ile Arg Gly Pro Asp Gly Val Cys Ile Pro Cys Gln Pro Gly Gln  
 420 425 430  
 Pro Gly Gln Leu Val Gly Arg Ile Ile Gln Gln Asp Pro Leu Arg Arg  
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 Phe Asp Gly Tyr Leu Asn Gln Gly Ala Asn Asn Lys Lys Ile Ala Asn  
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 Asp Val Phe Lys Lys Gly Asp Gln Ala Tyr Leu Thr Gly Asp Val Leu  
 465 470 475 480  
 Val Met Asp Glu Leu Gly Tyr Leu Tyr Phe Arg Asp Arg Thr Gly Asp  
 485 490 495  
 Thr Phe Arg Trp Lys Gly Glu Asn Val Ser Thr Thr Glu Val Glu Gly  
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 Thr Leu Ser Arg Leu Leu His Met Ala Asp Val Ala Val Tyr Gly Val  
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 Glu Val Pro Gly Thr Glu Gly Arg Ala Gly Met Ala Ala Val Ala Ser  
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 Pro Ile Ser Asn Cys Asp Leu Glu Ser Phe Ala Gln Thr Leu Lys Lys  
 545 550 555 560  
 Glu Leu Pro Leu Tyr Ala Arg Pro Ile Phe Leu Arg Phe Leu Pro Glu  
 565 570 575  
 Leu His Lys Thr Gly Thr Phe Lys Phe Gln Lys Thr Glu Leu Arg Lys  
 580 585 590  
 Glu Gly Phe Asp Pro Ser Val Val Lys Asp Pro Leu Phe Tyr Leu Asp  
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| catagttcag  | cagctatcct  | gggaatttct  | ggatgtgttg | agttgggtgc  | cacttgtgtg | 1500 |
| ttaaagaaga  | aattttcagc  | aagccagttt  | tggagtgact | gcaagaagta  | tgatgtgact | 1560 |
| gtgtttcagt  | atattggaga  | actttgtcgc  | tacctttgca | aacaatctaa  | gagagaagga | 1620 |
| gaaaaggatc  | ataaggtgcg  | tttggcaatt  | ggaaatggca | tacggagtga  | tgtatggaga | 1680 |
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| agcatatctt  | tcatgaacta  | cactgggaga  | attggagcaa | ttggggagaac | aaatttgttt | 1800 |
| tacaaacttc  | tttccacttt  | tgacttaata  | aagtatgact | ttcagaaaga  | tgaacccatg | 1860 |
| agaaatgagc  | agggttggtg  | tattcatgtg  | aaaaaaggag | aacctggact  | tctcatttct | 1920 |
| cgagtgaatg  | caaaaaatcc  | cttctttggc  | tatgctgggc | cttataagca  | cacaaaagac | 1980 |
| aaattgcttt  | gtgatgtttt  | taagaaggga  | gatgtttacc | ttaatactgg  | agacttaata | 2040 |
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| aaggggagcta | acattaatta  | tgcatgtact  | atatttcctt | aatatgagag  | ataatttttt | 2640 |
| aattgcataa  | gaattttaat  | ttcttttaat  | tgatataaac | attagttagat | tattcttttt | 2700 |
| atctatttgg  | agatttcagt  | cataactaag  | tattttcctt | aatactaaag  | attttaata  | 2760 |
| ataaatagtg  | gctagcgggt  | tggacaatca  | ctaaaaatgt | acttttcta   | aagtaaaatt | 2820 |
| tctaattttg  | aataaaagat  | taaattttac  | tgaaaaaaa  | aaaaaaaaa   | aaaattggcg | 2880 |
| gccgc       |             |             |            |             |            | 2885 |

<210> 37  
 <211> 619  
 <212> PRT  
 <213> Homo sapiens

<400> 37

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Ser | Trp | Leu | Thr | Val | Leu | Gly | Ala | Gly | Met | Val | Val | Leu |
| 1   |     |     | 5   |     |     |     |     | 10  |     |     |     |     |     | 15  |     |
| His | Phe | Leu | Gln | Lys | Leu | Leu | Phe | Pro | Tyr | Phe | Trp | Asp | Asp | Phe | Trp |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Val | Leu | Lys | Val | Val | Leu | Ile | Ile | Ile | Arg | Leu | Lys | Lys | Tyr | Glu |
|     |     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Lys | Arg | Gly | Glu | Leu | Val | Thr | Val | Leu | Asp | Lys | Phe | Leu | Ser | His | Ala |
|     |     |     | 50  |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Arg | Gln | Pro | Arg | Lys | Pro | Phe | Ile | Ile | Tyr | Glu | Gly | Asp | Ile | Tyr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Thr | Tyr | Gln | Asp | Val | Asp | Lys | Arg | Ser | Ser | Arg | Val | Ala | His | Val | Phe |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |     | 95  |     |
| Leu | Asn | His | Ser | Ser | Leu | Lys | Lys | Gly | Asp | Thr | Val | Ala | Leu | Leu | Met |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Asn | Glu | Pro | Asp | Phe | Val | His | Val | Trp | Phe | Gly | Leu | Ala | Lys | Leu |
|     |     |     | 115 |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Gly | Cys | Val | Val | Ala | Phe | Leu | Asn | Thr | Asn | Ile | Arg | Ser | Asn | Ser | Leu |
|     |     |     | 130 |     |     |     | 135 |     |     |     | 140 |     |     |     |     |
| Leu | Asn | Cys | Ile | Arg | Ala | Cys | Gly | Pro | Arg | Ala | Leu | Val | Val | Gly | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Asp | Leu | Leu | Gly | Thr | Val | Glu | Glu | Ile | Leu | Pro | Ser | Leu | Ser | Glu | Asn |
|     |     |     | 165 |     |     |     |     | 170 |     |     |     |     |     | 175 |     |
| Ile | Ser | Val | Trp | Gly | Met | Lys | Asp | Ser | Val | Pro | Gln | Gly | Val | Ile | Ser |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |

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Leu Lys Glu Lys Leu Ser Thr Ser Pro Asp Glu Pro Val Pro Arg Ser
195 200 205
His His Val Val Ser Leu Leu Lys Ser Thr Cys Leu Tyr Ile Phe Thr
210 215 220
Ser Gly Thr Thr Gly Leu Pro Lys Ala Ala Val Ile Ser Gln Leu Gln
225 230 235 240
Val Leu Arg Gly Ser Ala Val Leu Trp Ala Phe Gly Cys Thr Ala His
245 250 255
Asp Ile Val Tyr Ile Thr Leu Pro Leu Tyr His Ser Ser Ala Ala Ile
260 265 270
Leu Gly Ile Ser Gly Cys Val Glu Leu Gly Ala Thr Cys Val Leu Lys
275 280 285
Lys Lys Phe Ser Ala Ser Gln Phe Trp Ser Asp Cys Lys Lys Tyr Asp
290 295 300
Val Thr Val Phe Gln Tyr Ile Gly Glu Leu Cys Arg Tyr Leu Cys Lys
305 310 315 320
Gln Ser Lys Arg Glu Gly Glu Lys Asp His Lys Val Arg Leu Ala Ile
325 330 335
Gly Asn Gly Ile Arg Ser Asp Val Trp Arg Glu Phe Leu Asp Arg Phe
340 345 350
Gly Asn Ile Lys Val Cys Glu Leu Tyr Ala Ala Thr Glu Ser Ser Ile
355 360 365
Ser Phe Met Asn Tyr Thr Gly Arg Ile Gly Ala Ile Gly Arg Thr Asn
370 375 380
Leu Phe Tyr Lys Leu Leu Ser Thr Phe Asp Leu Ile Lys Tyr Asp Phe
385 390 395 400
Gln Lys Asp Glu Pro Met Arg Asn Glu Gln Gly Trp Cys Ile His Val
405 410 415
Lys Lys Gly Glu Pro Gly Leu Leu Ile Ser Arg Val Asn Ala Lys Asn
420 425 430
Pro Phe Phe Gly Tyr Ala Gly Pro Tyr Lys His Thr Lys Asp Lys Leu
435 440 445
Leu Cys Asp Val Phe Lys Lys Gly Asp Val Tyr Leu Asn Thr Gly Asp
450 455 460
Leu Ile Val Gln Asp Gln Asp Asn Phe Leu Tyr Phe Trp Asp Arg Thr
465 470 475 480
Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Glu Val
485 490 495
Ala Asp Val Ile Gly Met Leu Asp Phe Ile Gln Glu Ala Asn Val Tyr
500 505 510
Gly Val Ala Ile Ser Gly Tyr Glu Gly Arg Ala Gly Met Ala Ser Ile
515 520 525
Ile Leu Lys Pro Asn Thr Ser Leu Asp Leu Glu Lys Val Tyr Glu Gln
530 535 540
Val Val Thr Phe Leu Pro Ala Tyr Ala Cys Pro Arg Phe Leu Arg Ile
545 550 555 560
Gln Glu Lys Met Glu Ala Thr Gly Thr Phe Lys Leu Leu Lys His Gln
565 570 575
Leu Val Glu Asp Gly Phe Asn Pro Leu Lys Ile Ser Glu Pro Leu Tyr
580 585 590
Phe Met Asp Asn Leu Lys Lys Ser Tyr Val Leu Leu Thr Arg Glu Leu
595 600 605
Tyr Asp Gln Ile Met Leu Gly Glu Ile Lys Leu
610 615

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&lt;210&gt; 38

&lt;211&gt; 646

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

<400> 38

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Ala | Pro | Gly | Ala | Gly | Ala | Ala | Ser | Val | Val | Ser | Leu | Ala | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu | Trp | Leu | Leu | Gly | Leu | Pro | Trp | Thr | Trp | Ser | Ala | Ala | Ala | Ala | Leu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly | Val | Tyr | Val | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Leu | Arg | Ile | Val | Cys |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Lys | Thr | Ala | Arg | Arg | Asp | Leu | Phe | Gly | Leu | Ser | Val | Leu | Ile | Arg | Val |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Arg | Leu | Glu | Leu | Arg | Arg | His | Gln | Arg | Ala | Gly | His | Thr | Ile | Pro | Arg |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ile | Phe | Gln | Ala | Val | Val | Gln | Arg | Gln | Pro | Glu | Arg | Leu | Ala | Leu | Val |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |     | 95  |     |
| Asp | Ala | Gly | Thr | Gly | Glu | Cys | Trp | Thr | Phe | Ala | Gln | Leu | Asp | Ala | Tyr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Asn | Ala | Val | Ala | Asn | Leu | Phe | Arg | Gln | Leu | Gly | Phe | Ala | Pro | Gly |
|     | 115 |     |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Asp | Val | Val | Ala | Ile | Phe | Leu | Glu | Gly | Arg | Pro | Glu | Phe | Val | Gly | Leu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Trp | Leu | Gly | Leu | Ala | Lys | Ala | Gly | Met | Glu | Ala | Ala | Leu | Leu | Asn | Val |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Asn | Leu | Arg | Arg | Glu | Pro | Leu | Ala | Phe | Cys | Leu | Gly | Thr | Ser | Gly | Ala |
|     |     |     |     | 165 |     |     |     | 170 |     |     |     |     |     | 175 |     |
| Lys | Ala | Leu | Ile | Phe | Gly | Gly | Glu | Met | Val | Ala | Ala | Val | Ala | Glu | Val |
|     |     | 180 |     |     |     |     | 185 |     |     |     |     |     | 190 |     |     |
| Ser | Gly | His | Leu | Gly | Lys | Ser | Leu | Ile | Lys | Phe | Cys | Ser | Gly | Asp | Leu |
|     | 195 |     |     |     |     | 200 |     |     |     |     |     | 205 |     |     |     |
| Gly | Pro | Glu | Gly | Ile | Leu | Pro | Asp | Thr | His | Leu | Leu | Asp | Pro | Leu | Leu |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Lys | Glu | Ala | Ser | Thr | Ala | Pro | Leu | Ala | Gln | Ile | Pro | Ser | Lys | Gly | Met |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro |
|     |     |     |     | 245 |     |     |     | 250 |     |     |     |     |     | 255 |     |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ala | Phe |
|     |     | 260 |     |     |     |     | 265 |     |     |     |     |     | 270 |     |     |
| Gly | His | His | Ala | Tyr | Arg | Met | Gln | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys |
|     | 275 |     |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Ile | Gly | Val | Gly | Gln | Cys |
|     | 290 |     |     |     | 295 |     |     |     |     |     | 300 |     |     |     |     |
| Leu | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Lys | Gln | Pro | Val | Arg | Glu | Ala |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Glu | Arg | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Glu | Arg | Phe | Gly | Val | Arg | Gln | Ile | Gly |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Pro | His | Val |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Leu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Arg | Asp | Ala | Gln | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Ala | Gly | Glu | Pro | Gly |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Tyr | Val | Ser | Glu | Ser | Ala | Thr | Ser | Lys | Lys | Ile | Ala | His | Ser | Val |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Phe | Ser | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Val | Leu |
|     |     |     | 515 |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Ser | Arg | Leu | Leu | Gly | Gln | Thr | Asp | Val | Ala | Val | Tyr | Gly | Val | Ala | Val |
|     |     |     | 530 |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Pro | Gly | Val | Glu | Gly | Lys | Ala | Gly | Met | Ala | Ala | Val | Ala | Asp | Pro | His |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Ser | Leu | Leu | Asp | Pro | Asn | Ala | Ile | Tyr | Gln | Glu | Leu | Gln | Lys | Val | Leu |
|     |     |     |     | 565 |     |     |     | 570 |     |     |     |     |     | 575 |     |
| Ala | Pro | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Gln | Val | Asp |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Thr | Thr | Gly | Thr | Phe | Lys | Ile | Gln | Lys | Thr | Arg | Leu | Gln | Arg | Glu | Gly |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Phe | Asp | Pro | Arg | Gln | Thr | Ser | Asp | Arg | Leu | Phe | Phe | Leu | Asp | Leu | Lys |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Gln | Gly | His | Tyr | Leu | Pro | Leu | Asn | Glu | Ala | Val | Tyr | Thr | Arg | Ile | Cys |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Ser | Gly | Ala | Phe | Ala | Leu |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     | 645 |     |     |     |     |     |     |     |     |     |     |     |

&lt;210&gt; 39

&lt;211&gt; 632

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 39

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Phe | Ser | Lys | Leu | Val | Leu | Lys | Leu | Pro | Trp | Thr | Gln | Val | Gly | Phe |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ser | Leu | Leu | Phe | Leu | Tyr | Leu | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Ile | Arg |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Val | Phe | Ile | Lys | Thr | Ile | Arg | Arg | Asp | Ile | Phe | Gly | Gly | Leu | Val | Leu |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Leu | Lys | Val | Lys | Ala | Lys | Val | Arg | Gln | Cys | Leu | Gln | Glu | Arg | Arg | Thr |
|     |     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Val | Pro | Ile | Leu | Phe | Ala | Ser | Thr | Val | Arg | Arg | His | Pro | Asp | Lys | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ala | Leu | Ile | Phe | Glu | Gly | Thr | Asp | Thr | His | Trp | Thr | Phe | Arg | Gln | Leu |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Glu | Tyr | Ser | Ser | Ser | Val | Ala | Asn | Phe | Leu | Gln | Ala | Arg | Gly | Leu |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ala | Ser | Gly | Asp | Val | Ala | Ala | Ile | Phe | Met | Glu | Asn | Arg | Asn | Glu | Phe |
|     |     |     | 115 |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Val | Gly | Leu | Trp | Leu | Gly | Met | Ala | Lys | Leu | Gly | Val | Glu | Ala | Ala | Leu |
|     |     |     | 130 |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Ile | Asn | Thr | Asn | Leu | Arg | Arg | Asp | Ala | Leu | Leu | His | Cys | Leu | Thr | Thr |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Ser | Arg | Ala | Arg | Ala | Leu | Val | Phe | Gly | Ser | Glu | Met | Ala | Ser | Ala | Ile |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Cys | Glu | Val | His | Ala | Ser | Leu | Asp | Pro | Ser | Leu | Ser | Leu | Phe | Cys | Ser |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Gly | Ser | Trp | Glu | Pro | Gly | Ala | Val | Pro | Pro | Ser | Thr | Glu | His | Leu | Asp |
|     |     |     | 195 |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Pro | Leu | Leu | Lys | Asp | Ala | Pro | Lys | His | Leu | Pro | Ser | Cys | Pro | Asp | Lys |
|     |     |     | 210 |     |     |     | 215 |     |     |     |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Phe | Thr | Asp | Lys | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Leu | Pro | Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     |     | 255 |
| Ala | Leu | Val | Tyr | Tyr | Gly | Phe | Arg | Met | Arg | Pro | Asn | Asp | Ile | Val | Tyr |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Asp | Cys | Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Val | Gly | Ile | Gly |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Gln | Cys | Leu | Leu | His | Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys | Phe | Ser |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Ala | Ser | Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Ile | Val |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro | Pro | Arg |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Glu | Ala | Glu | Asn | Gln | His | Gln | Val | Arg | Met | Ala | Leu | Gly | Asn | Gly | Leu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Arg | Gln | Ser | Ile | Trp | Thr | Asn | Phe | Ser | Ser | Arg | Phe | His | Ile | Pro | Gln |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Val | Ala | Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu | Gly | Asn |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Phe | Asp | Ser | Gln | Val | Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Ser |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Phe | Val | Tyr | Pro | Ile | Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr | Met | Glu |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Leu | Ile | Arg | Gly | Pro | Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Glu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Pro | Gly | Gln | Leu | Val | Gly | Arg | Ile | Gln | Lys | Asp | Pro | Leu | Arg | Arg |     |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Phe | Asp | Gly | Tyr | Leu | Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile | Ala | Lys |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Asp | Val | Phe | Lys | Lys | Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp | Val | Leu |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Val | Met | Asp | Glu | Leu | Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr | Gly | Asp |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Thr | Leu | Ser | Arg | Leu | Leu | Asp | Met | Ala | Asp | Val | Ala | Val | Tyr | Gly | Val |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Glu | Val | Pro | Gly | Thr | Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val | Ala | Ser |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Pro | Thr | Gly | Asn | Cys | Asp | Leu | Glu | Arg | Phe | Ala | Gln | Val | Leu | Glu | Lys |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Glu | Leu | Pro | Leu | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Glu |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Leu | His | Lys | Thr | Gly | Thr | Tyr | Lys | Phe | Gln | Lys | Thr | Glu | Leu | Arg | Lys |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Glu | Gly | Phe | Asp | Pro | Ala | Ile | Val | Lys | Asp | Pro | Leu | Phe | Tyr | Leu | Asp |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Ala | Gln | Lys | Gly | Arg | Tyr | Val | Pro | Leu | Asp | Gln | Glu | Ala | Tyr | Ser | Arg |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Ile | Gln | Ala | Gly | Glu | Glu | Lys | Leu |     |     |     |     |     |     |     |     |
| 625 |     |     |     |     | 630 |     |     |     |     |     |     |     |     |     |     |

&lt;210&gt; 40

&lt;211&gt; 619

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 40

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Ser | Trp | Leu | Thr | Val | Leu | Gly | Ala | Gly | Met | Val | Val | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| His | Phe | Leu | Gln | Lys | Leu | Leu | Phe | Pro | Tyr | Phe | Trp | Asp | Asp | Phe | Trp |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Val | Leu | Lys | Val | Val | Leu | Ile | Ile | Ile | Arg | Leu | Lys | Lys | Tyr | Glu |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Lys | Arg | Gly | Glu | Leu | Val | Thr | Val | Leu | Asp | Lys | Phe | Leu | Ser | His | Ala |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Arg | Gln | Pro | Arg | Lys | Pro | Phe | Ile | Ile | Tyr | Glu | Gly | Asp | Ile | Tyr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Thr | Tyr | Gln | Asp | Val | Asp | Lys | Arg | Ser | Ser | Arg | Val | Ala | His | Val | Phe |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Asn | His | Ser | Ser | Leu | Lys | Lys | Gly | Asp | Thr | Val | Ala | Leu | Leu | Met |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Asn | Glu | Pro | Asp | Phe | Val | His | Val | Trp | Phe | Gly | Leu | Ala | Lys | Leu |
|     | 115 |     |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Gly | Cys | Val | Val | Ala | Phe | Leu | Asn | Thr | Asn | Ile | Arg | Ser | Asn | Ser | Leu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Leu | Asn | Cys | Ile | Arg | Ala | Cys | Gly | Pro | Arg | Ala | Leu | Val | Val | Gly | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Asp | Leu | Leu | Gly | Thr | Val | Glu | Glu | Ile | Leu | Pro | Ser | Leu | Ser | Glu | Asn |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Ile | Ser | Val | Trp | Gly | Met | Lys | Asp | Ser | Val | Pro | Gln | Gly | Val | Ile | Ser |
|     |     | 180 |     |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Leu | Lys | Glu | Lys | Leu | Ser | Thr | Ser | Pro | Asp | Glu | Pro | Val | Pro | Arg | Ser |
|     | 195 |     |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| His | His | Val | Val | Ser | Leu | Leu | Lys | Ser | Thr | Cys | Leu | Tyr | Ile | Phe | Thr |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Val | Ile | Ser | Gln | Leu | Gln |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Val | Leu | Arg | Gly | Ser | Ala | Val | Leu | Trp | Ala | Phe | Gly | Cys | Thr | Ala | His |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asp | Ile | Val | Tyr | Ile | Thr | Leu | Pro | Leu | Tyr | His | Ser | Ser | Ala | Ala | Ile |
|     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Leu | Gly | Ile | Ser | Gly | Cys | Val | Glu | Leu | Gly | Ala | Thr | Cys | Val | Leu | Lys |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Lys | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Ser | Asp | Cys | Lys | Lys | Tyr | Asp |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Val | Thr | Val | Phe | Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | Leu | Cys | Lys |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Gln | Ser | Lys | Arg | Glu | Gly | Glu | Lys | Asp | His | Lys | Val | Arg | Leu | Ala | Ile |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Gly | Asn | Gly | Ile | Arg | Ser | Asp | Val | Trp | Arg | Glu | Phe | Leu | Asp | Arg | Phe |
|     |     | 340 |     |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Gly | Asn | Ile | Lys | Val | Cys | Glu | Leu | Tyr | Ala | Ala | Thr | Glu | Ser | Ser | Ile |
|     | 355 |     |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ser | Phe | Met | Asn | Tyr | Thr | Gly | Arg | Ile | Gly | Ala | Ile | Gly | Arg | Thr | Asn |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Leu | Phe | Tyr | Lys | Leu | Leu | Ser | Thr | Phe | Asp | Leu | Ile | Lys | Tyr | Asp | Phe |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gln | Lys | Asp | Glu | Pro | Met | Arg | Asn | Glu | Gln | Gly | Trp | Cys | Ile | His | Val |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Lys | Lys | Gly | Glu | Pro | Gly | Leu | Leu | Ile | Ser | Arg | Val | Asn | Ala | Lys | Asn |
|     |     |     |     | 420 |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Pro | Phe | Phe | Gly | Tyr | Ala | Gly | Pro | Tyr | Lys | His | Thr | Lys | Asp | Lys | Leu |
|     | 435 |     |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Leu | Cys | Asp | Val | Phe | Lys | Lys | Gly | Asp | Val | Tyr | Leu | Asn | Thr | Gly | Asp |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |

Leu Ile Val Gln Asp Gln Asp Asn Phe Leu Tyr Phe Trp Asp Arg Thr  
 465 470 475 480  
 Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Glu Val  
 485 490 495  
 Ala Asp Val Ile Gly Met Leu Asp Phe Ile Gln Glu Ala Asn Val Tyr  
 500 505 510  
 Gly Val Ala Ile Ser Gly Tyr Glu Gly Arg Ala Gly Met Ala Ser Ile  
 515 520 525  
 Ile Leu Lys Pro Asn Thr Ser Leu Asp Leu Glu Lys Val Tyr Glu Gln  
 530 535 540  
 Val Val Thr Phe Leu Pro Ala Tyr Ala Cys Pro Arg Phe Leu Arg Ile  
 545 550 555 560  
 Gln Glu Lys Met Glu Ala Thr Gly Thr Phe Lys Leu Leu Lys His Gln  
 565 570 575  
 Leu Val Glu Asp Gly Phe Asn Pro Leu Lys Ile Ser Glu Pro Leu Tyr  
 580 585 590  
 Phe Met Asp Asn Leu Lys Lys Ser Tyr Val Leu Leu Thr Arg Glu Leu  
 595 600 605  
 Tyr Asp Gln Ile Met Leu Gly Glu Ile Lys Leu  
 610 615

<210> 41  
 <211> 643  
 <212> PRT  
 <213> Homo sapiens

<400> 41  
 Met Leu Leu Gly Ala Ser Leu Val Gly Val Leu Leu Phe Ser Lys Leu  
 1 5 10 15  
 Val Leu Lys Leu Pro Trp Thr Gln Val Gly Phe Ser Leu Leu Phe Leu  
 20 25 30  
 Tyr Leu Gly Ser Gly Gly Trp Arg Phe Ile Arg Val Phe Ile Lys Thr  
 35 40 45  
 Ile Arg Arg Asp Ile Phe Gly Gly Leu Val Leu Leu Lys Val Lys Ala  
 50 55 60  
 Lys Val Arg Gln Cys Leu Gln Glu Arg Arg Thr Val Pro Ile Leu Phe  
 65 70 75 80  
 Ala Ser Thr Val Arg Arg His Pro Asp Lys Thr Ala Leu Ile Phe Glu  
 85 90 95  
 Gly Thr Asp Thr His Trp Thr Phe Arg Gln Leu Asp Glu Tyr Ser Ser  
 100 105 110  
 Ser Val Ala Asn Phe Leu Gln Ala Arg Gly Leu Ala Ser Gly Asp Val  
 115 120 125  
 Ala Ala Ile Phe Met Glu Asn Arg Asn Glu Phe Val Gly Leu Trp Leu  
 130 135 140  
 Gly Met Ala Lys Leu Gly Val Glu Ala Ala Leu Ile Asn Thr Asn Leu  
 145 150 155 160  
 Arg Arg Asp Ala Leu Leu His Cys Leu Thr Thr Ser Arg Ala Arg Ala  
 165 170 175  
 Leu Val Phe Gly Ser Glu Met Ala Ser Ala Ile Cys Glu Val His Ala  
 180 185 190  
 Ser Leu Asp Pro Ser Leu Ser Leu Phe Cys Ser Gly Ser Trp Glu Pro  
 195 200 205  
 Gly Ala Val Pro Pro Ser Thr Glu His Leu Asp Pro Leu Leu Lys Asp  
 210 215 220  
 Ala Pro Lys His Leu Pro Ser Cys Pro Asp Lys Gly Phe Thr Asp Lys  
 225 230 235 240  
 Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly Leu Pro Lys Ala Ala  
 245 250 255

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Ile Val Val His Ser Arg Tyr Tyr Arg Met Ala Ala Leu Val Tyr Tyr
      260      265      270
Gly Phe Arg Met Arg Pro Asn Asp Ile Val Tyr Asp Cys Leu Pro Leu
      275      280      285
Tyr His Ser Ala Gly Asn Ile Val Gly Ile Gly Gln Cys Leu Leu His
      290      295      300
Gly Met Thr Val Val Ile Arg Lys Lys Phe Ser Ala Ser Arg Phe Trp
305      310      315      320
Asp Asp Cys Ile Lys Tyr Asn Cys Thr Ile Val Gln Tyr Ile Gly Glu
      325      330      335
Leu Cys Arg Tyr Leu Leu Asn Gln Pro Arg Glu Ala Glu Asn Gln
      340      345      350
His Gln Val Arg Met Ala Leu Gly Asn Gly Leu Arg Gln Ser Ile Trp
      355      360      365
Thr Asn Phe Ser Ser Arg Phe His Ile Pro Gln Val Ala Glu Phe Tyr
      370      375      380
Gly Ala Thr Glu Cys Asn Cys Ser Leu Gly Asn Phe Asp Ser Gln Val
385      390      395      400
Gly Ala Cys Gly Phe Asn Ser Arg Ile Leu Ser Phe Val Tyr Pro Ile
      405      410      415
Arg Leu Val Arg Val Asn Glu Asp Thr Met Glu Leu Ile Arg Gly Pro
      420      425      430
Asp Gly Val Cys Ile Pro Cys Gln Pro Gly Glu Pro Gly Gln Leu Val
      435      440      445
Gly Arg Ile Ile Gln Lys Asp Pro Leu Arg Arg Phe Asp Gly Tyr Leu
      450      455      460
Asn Gln Gly Ala Asn Asn Lys Lys Ile Ala Lys Asp Val Phe Lys Lys
465      470      475      480
Gly Asp Gln Ala Tyr Leu Thr Gly Asp Val Leu Val Met Asp Glu Leu
      485      490      495
Gly Tyr Leu Tyr Phe Arg Asp Arg Thr Gly Asp Thr Phe Arg Trp Lys
      500      505      510
Gly Glu Asn Val Ser Thr Thr Glu Val Glu Gly Thr Leu Ser Arg Leu
      515      520      525
Leu Asp Met Ala Asp Val Ala Val Tyr Gly Val Glu Val Pro Gly Thr
      530      535      540
Glu Gly Arg Ala Gly Met Ala Ala Val Ala Ser Pro Thr Gly Asn Cys
545      550      555      560
Asp Leu Glu Arg Phe Ala Gln Val Leu Glu Lys Glu Leu Pro Leu Tyr
      565      570      575
Ala Arg Pro Ile Phe Leu Arg Leu Leu Pro Glu Leu His Lys Thr Gly
      580      585      590
Thr Tyr Lys Phe Gln Lys Thr Glu Leu Arg Lys Glu Gly Phe Asp Pro
      595      600      605
Ala Ile Val Lys Asp Pro Leu Phe Tyr Leu Asp Ala Gln Lys Gly Arg
      610      615      620
Tyr Val Pro Leu Asp Gln Glu Ala Tyr Ser Arg Ile Gln Ala Gly Glu
625      630      635      640
Glu Lys Leu

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<210> 42
<211> 643
<212> PRT
<213> Mus musculus

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<220>
<221> VARIANT
<222> (1)...(643)

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&lt;223&gt; Xaa = Any Amino Acid

<400> 42

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Gly | Ala | Ser | Leu | Val | Gly | Val | Leu | Leu | Phe | Ser | Lys | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Val | Leu | Lys | Leu | Pro | Trp | Thr | Gln | Val | Gly | Phe | Ser | Leu | Leu | Xaa | Leu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     |     | 30  |     |
| Tyr | Leu | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Ile | Arg | Val | Phe | Ile | Lys | Thr |
|     |     | 35  |     |     |     | 40  |     |     |     |     |     | 45  |     |     |     |
| Val | Arg | Arg | Asp | Ile | Phe | Gly | Gly | Met | Val | Leu | Leu | Lys | Val | Lys | Thr |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Val | Arg | Arg | Tyr | Leu | Gln | Glu | Arg | Lys | Thr | Val | Pro | Leu | Leu | Phe |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ala | Ser | Met | Val | Gln | Arg | His | Pro | Asp | Lys | Thr | Ala | Leu | Ile | Phe | Glu |
|     |     |     |     | 85  |     |     |     |     |     | 90  |     |     |     | 95  |     |
| Gly | Thr | Asp | Thr | His | Trp | Thr | Phe | Arg | Gln | Leu | Asp | Glu | Tyr | Ser | Ser |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Val | Ala | Asn | Phe | Leu | Gln | Ala | Arg | Gly | Leu | Ala | Ser | Gly | Asn | Val |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Val | Ala | Leu | Phe | Met | Glu | Asn | Arg | Asn | Glu | Phe | Val | Gly | Leu | Trp | Xaa |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Gly | Met | Ala | Lys | Leu | Gly | Val | Glu | Ala | Ala | Leu | Ile | Asn | Thr | Asn | Leu |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Arg | Arg | Asp | Ala | Leu | Arg | His | Cys | Leu | Asp | Thr | Ser | Lys | Ala | Arg | Ala |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Leu | Ile | Phe | Gly | Ser | Glu | Met | Ala | Ser | Ala | Ile | Cys | Glu | Ile | His | Ala |
|     |     |     | 180 |     |     |     |     |     | 185 |     |     |     | 190 |     |     |
| Ser | Leu | Gly | Pro | Thr | Leu | Ser | Leu | Phe | Cys | Ser | Gly | Ser | Trp | Glu | Pro |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ser | Thr | Val | Pro | Val | Ser | Thr | Glu | His | Leu | Asp | Pro | Leu | Leu | Glu | Asp |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ala | Pro | Lys | His | Leu | Pro | Ser | His | Pro | Asp | Lys | Gly | Phe | Thr | Asp | Lys |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala |
|     |     |     |     | 245 |     |     |     |     |     | 250 |     |     |     | 255 |     |
| Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ser | Leu | Val | Tyr | Tyr |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Gly | Phe | Arg | Met | Arg | Pro | Asp | Asp | Ile | Val | Tyr | Asp | Cys | Leu | Pro | Leu |
|     |     | 275 |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |
| Tyr | His | Ser | Ser | Arg | Lys | His | Arg | Gly | Asp | Trp | Gln | Cys | Leu | Leu | His |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys | Phe | Ser | Ala | Ser | Arg | Phe | Trp |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Ile | Val | Gln | Tyr | Ile | Gly | Glu |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro | Pro | Arg | Glu | Ala | Glu | Ser | Arg |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| His | Lys | Val | Arg | Met | Ala | Leu | Gly | Asn | Gly | Leu | Arg | Gln | Ser | Ile | Trp |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Thr | Asp | Phe | Ser | Ser | Arg | Phe | His | Ile | Pro | Gln | Val | Ala | Glu | Phe | Tyr |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu | Gly | Asn | Phe | Asp | Ser | Arg | Val |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Ser | Phe | Val | Tyr | Pro | Ile |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Ile | Arg | Gly | Pro |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Gln | Pro | Gly | Gln | Leu | Val |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Arg | Ile | Ile | Gln | Lys | Asp | Pro | Leu | Arg | Arg | Phe | Asp | Gly | Tyr | Leu |
| 450 |     |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile | Ala | Asn | Asp | Val | Phe | Lys | Lys |
| 465 |     |     |     |     |     | 470 |     |     |     | 475 |     |     |     |     | 480 |
| Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp | Val | Leu | Val | Met | Asp | Glu | Leu |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     | 510 |     |     |     |
| Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Thr | Leu | Ser | Arg | Leu |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Leu | His | Met | Ala | Asp | Val | Ala | Val | Tyr | Gly | Val | Glu | Val | Pro | Gly | Thr |
| 530 |     |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val | Ala | Ser | Pro | Ile | Ser | Asn | Cys |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Asp | Leu | Glu | Ser | Phe | Ala | Gln | Thr | Leu | Lys | Lys | Glu | Leu | Pro | Leu | Tyr |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     |     | 575 |
| Ala | Arg | Pro | Ile | Phe | Leu | Arg | Phe | Leu | Pro | Glu | Leu | His | Lys | Thr | Gly |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Thr | Phe | Lys | Phe | Gln | Lys | Thr | Glu | Leu | Arg | Lys | Glu | Gly | Phe | Asp | Pro |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Ser | Val | Val | Lys | Asp | Pro | Leu | Phe | Tyr | Leu | Asp | Ala | Arg | Lys | Gly | Cys |
| 610 |     |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Tyr | Val | Ala | Leu | Asp | Gln | Glu | Ala | Tyr | Thr | Arg | Ile | Gln | Ala | Gly | Glu |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Glu | Lys | Leu |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 43  
 <211> 646  
 <212> PRT  
 <213> Homo sapiens

<400> 43

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Ala | Pro | Gly | Ala | Gly | Ala | Ala | Ser | Val | Val | Ser | Leu | Ala | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu | Trp | Leu | Leu | Gly | Leu | Pro | Trp | Thr | Trp | Ser | Ala | Ala | Ala | Ala | Leu |
|     |     | 20  |     |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly | Val | Tyr | Val | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Leu | Arg | Ile | Val | Cys |
|     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |     |
| Lys | Thr | Ala | Arg | Arg | Asp | Leu | Phe | Gly | Leu | Ser | Val | Leu | Ile | Arg | Val |
| 50  |     |     |     |     | 55  |     |     |     |     |     | 60  |     |     |     |     |
| Arg | Leu | Glu | Leu | Arg | Arg | His | Gln | Arg | Ala | Gly | His | Thr | Ile | Pro | Arg |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ile | Phe | Gln | Ala | Val | Val | Gln | Arg | Gln | Pro | Glu | Arg | Leu | Ala | Leu | Val |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Ala | Gly | Thr | Gly | Glu | Cys | Trp | Thr | Phe | Ala | Gln | Leu | Asp | Ala | Tyr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ser | Asn | Ala | Val | Ala | Asn | Leu | Phe | Arg | Gln | Leu | Gly | Phe | Ala | Pro | Gly |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Asp | Val | Val | Ala | Ile | Phe | Leu | Glu | Gly | Arg | Pro | Glu | Phe | Val | Gly | Leu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Trp | Leu | Gly | Leu | Ala | Lys | Ala | Gly | Met | Glu | Ala | Ala | Leu | Leu | Asn | Val |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Asn | Leu | Arg | Arg | Glu | Pro | Leu | Ala | Phe | Cys | Leu | Gly | Thr | Ser | Gly | Ala |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Lys | Ala | Leu | Ile | Phe | Gly | Gly | Glu | Met | Val | Ala | Ala | Val | Ala | Glu | Val |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     |     | 190 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Gly | His | Leu | Gly | Lys | Ser | Leu | Ile | Lys | Phe | Cys | Ser | Gly | Asp | Leu | 195 | 200 | 205 |
| Gly | Pro | Glu | Gly | Ile | Leu | Pro | Asp | Thr | His | Leu | Leu | Asp | Pro | Leu | Leu | 210 | 215 | 220 |
| Lys | Glu | Ala | Ser | Thr | Ala | Pro | Leu | Ala | Gln | Ile | Pro | Ser | Lys | Gly | Met | 225 | 230 | 235 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | 245 | 250 | 255 |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ala | Phe | 260 | 265 | 270 |
| Gly | His | His | Ala | Tyr | Arg | Met | Gln | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys | 275 | 280 | 285 |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Ile | Gly | Val | Gly | Gln | Cys | 290 | 295 | 300 |
| Leu | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser | 305 | 310 | 315 |
| Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr | 325 | 330 | 335 |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Lys | Gln | Pro | Val | Arg | Glu | Ala | 340 | 345 | 350 |
| Glu | Arg | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro | 355 | 360 | 365 |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Glu | Arg | Phe | Gly | Val | Arg | Gln | Ile | Gly | 370 | 375 | 380 |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp | 385 | 390 | 395 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Pro | His | Val | 405 | 410 | 415 |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Leu | 420 | 425 | 430 |
| Arg | Asp | Ala | Gln | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Ala | Gly | Glu | Pro | Gly | 435 | 440 | 445 |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp | 450 | 455 | 460 |
| Gly | Tyr | Val | Ser | Glu | Ser | Ala | Thr | Ser | Lys | Lys | Ile | Ala | His | Ser | Val | 465 | 470 | 475 |
| Phe | Ser | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met | 485 | 490 | 495 |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe | 500 | 505 | 510 |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Val | Leu | 515 | 520 | 525 |
| Ser | Arg | Leu | Leu | Gly | Gln | Thr | Asp | Val | Ala | Val | Tyr | Gly | Val | Ala | Val | 530 | 535 | 540 |
| Pro | Gly | Val | Glu | Gly | Lys | Ala | Gly | Met | Ala | Ala | Val | Ala | Asp | Pro | His | 545 | 550 | 555 |
| Ser | Leu | Leu | Asp | Pro | Asn | Ala | Ile | Tyr | Gln | Glu | Leu | Gln | Lys | Val | Leu | 565 | 570 | 575 |
| Ala | Pro | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Gln | Val | Asp | 580 | 585 | 590 |
| Thr | Thr | Gly | Thr | Phe | Lys | Ile | Gln | Lys | Thr | Arg | Leu | Gln | Arg | Glu | Gly | 595 | 600 | 605 |
| Phe | Asp | Pro | Arg | Gln | Thr | Ser | Asp | Arg | Leu | Phe | Phe | Leu | Asp | Leu | Lys | 610 | 615 | 620 |
| Gln | Gly | His | Tyr | Leu | Pro | Leu | Asn | Glu | Ala | Val | Tyr | Thr | Arg | Ile | Cys | 625 | 630 | 635 |
| Ser | Gly | Ala | Phe | Ala | Leu |     |     |     |     |     |     |     |     |     |     | 645 |     |     |



<210> 44  
 <211> 2710  
 <212> DNA  
 <213> Mus musculus

<400> 44

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| ccctggaccc  | aggtgggatt  | ctccctgttg  | ctcctgtact | tgggggtctgg | tggctggcgt  | 120  |
| ttcatccggg  | tcttcatcaa  | gacggtcagg  | agagatatct | ttggtggcat  | ggtgctcctg  | 180  |
| aaggtgaaga  | ccaaggtg    | acgggtacct  | caggagcgga | agacgggtgcc | cctgctgttt  | 240  |
| gcttcaatgg  | tacagcgcca  | cccggacaag  | acagccctga | tttctgaggg  | cacagacact  | 300  |
| cactggacct  | tcgcccagct  | ggatgagtag  | tccagtagtg | tggccaactt  | cctgcaggcc  | 360  |
| cggggcctgg  | cctcaggcaa  | tgtagttgcc  | ctctttatgg | aaaaccgcaa  | tgagtttgtg  | 420  |
| ggtctgtggc  | taggcatggc  | caagctgggc  | gtggaggcgg | ctctcatcaa  | caccaacctt  | 480  |
| aggcgggatg  | ccctgcgcca  | ctgtcttgac  | acctcaaagg | cacgagctct  | catctttggc  | 540  |
| agtgagatgg  | cctcagctat  | ctgtgagatc  | catgctagcc | tggagccac   | actcagcctc  | 600  |
| ttctgctctg  | gatcctggga  | gcccagcaca  | gtgcccgtca | gcacagagca  | tctggaccct  | 660  |
| cttctggaag  | atgccccgaa  | gcacctgccc  | agtcaccagg | acaagggttt  | tacagataag  | 720  |
| ctctctaca   | tctacacatc  | gggcaccacg  | gggctaccca | aagctgccat  | tgtgggtgcac | 780  |
| agcagggtatt | atcgtagtgg  | ttccctgggtg | tactatggat | tccgcatgcg  | gcctgatgac  | 840  |
| attgtctatg  | actgcctccc  | cctctaccac  | tcaagcagga | aacatcgtgg  | ggattggcag  | 900  |
| tgcttactcc  | acggcatgac  | tgtggtgatc  | cggagaaggt | tctcagcctc  | ccggttctgg  | 960  |
| gatgattgta  | tcaagtacaa  | ctgcacagtg  | gtacagtaca | ttggcgagct  | ctgccgctac  | 1020 |
| ctcctgaacc  | agccaccccc  | tgaggctgag  | tctcggcaca | aggtgcgcat  | ggcactgggc  | 1080 |
| aacgggtctcc | ggcagtcctat | ctggaccgac  | ttctccagcc | gtttccacat  | cccccagggtg | 1140 |
| gctgagttct  | atggggccac  | tgaatgcaac  | tgtagcctgg | gcaactttga  | cagccgggtg  | 1200 |
| ggggcctgtg  | gcttcaatag  | ccgcatcctg  | tcctttgtgt | accctatccg  | tttggtagct  | 1260 |
| gtcaatgagg  | ataccatgga  | actgatccgg  | ggaccgcgat | gagtctgcat  | tccctgtcaa  | 1320 |
| ccaggctcagc | caggccagct  | ggtgggtcgc  | atcatccagc | aggaccctct  | gcgcggtttc  | 1380 |
| gacgggtacc  | tcaaccaggg  | tgccaacaac  | aagaagattg | ctaattgatgt | cttcaagaag  | 1440 |
| ggggaccaag  | cctacctcac  | tggtagcgtc  | ctggtgatgg | atgagctggg  | ttacctgtac  | 1500 |
| ttccgagatc  | gcactgggga  | cacgttccgc  | tggaaagggg | agaatgtatc  | taccactgag  | 1560 |
| gtggagggca  | cactcagccg  | cctgcttcat  | atggcagatg | tggcagttta  | tgggtgtgag  | 1620 |
| gtgccaggaa  | ctgaaggccg  | agcaggaatg  | gctgccgttg | caagtcccat  | cagcaactgt  | 1680 |
| gacctggaga  | gctttgcaca  | gaccttgaaa  | aaggagctgc | ctctgtatgc  | ccgccccatc  | 1740 |
| ttcctgcgct  | tcttgccctga | gctgcacaag  | acagggacct | tcaagttcca  | gaagacagag  | 1800 |
| ttgcggaagg  | agggtcttga  | cccatctgtt  | gtgaaagacc | cgctgttcta  | tctggatgct  | 1860 |
| cggaaagggt  | gctacgttgc  | actggaccag  | gaggcctata | cccgcatacca | ggcaggcgag  | 1920 |
| gagaagctgt  | gatttcccc   | tacatccctc  | tgagggccag | aagatgctgg  | attcagagcc  | 1980 |
| ctagcgtcca  | ccccagaggg  | tcctgggcaa  | tgccagacca | aagctagcag  | ggccccgacc  | 2040 |
| tccgccccta  | ggtgctgata  | tcccctctcc  | caaactgcca | agtgaactac  | tgccgcttcc  | 2100 |
| ccgaccctcc  | agaggctttc  | tgtgaaagtc  | tcacccaagc | tgtgtcttct  | ggtccaggcg  | 2160 |
| tggccccctgg | ccccagggtt  | tctgataggc  | tccttttaga | tggatatctg  | ggtccagcgg  | 2220 |
| gccagggtgt  | gggagaggag  | tcactaagat  | ccctccaatc | agaaggggagc | ttacaaagga  | 2280 |
| accaaggcaa  | agcctgtaga  | ctcaggaagc  | taagtggcca | gagactatag  | tggccagtc   | 2340 |
| tcccatgtcc  | acagaggatc  | ttggtccaga  | gctgccaaag | tgtcacctct  | ccctgcctgc  | 2400 |
| acctctgggg  | aaaagaggac  | agcatgtggc  | cactgggcac | ctgtctcaag  | aagtcaggat  | 2460 |
| cacacactca  | gtccttggtt  | ctccagggtc  | ccttggttct | gtctcgggga  | gggagggacg  | 2520 |
| agtgtcctgt  | ctgtccttcc  | tgcctgtctg  | tgagtctgtg | ttgcttctcc  | atctgtccta  | 2580 |
| gcctgagtg   | gggtggaaca  | ggcatgagga  | gagtggtggc | cagggggcaa  | taaaactctgc | 2640 |
| cttgactcct  | cttaaaaaaa  | aaaaaaaaaa  | aaaaaaaaaa | aaaaaaaaaa  | aaaaaaaaaa  | 2700 |
| aaaaaaaaaa  |             |             |            |             |             | 2710 |

<210> 45  
 <211> 643  
 <212> PRT  
 <213> Mus musculus

<400> 45

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Gly | Ala | Ser | Leu | Val | Gly | Ala | Leu | Leu | Phe | Ser | Lys | Leu | 1   | 5   | 10  | 15  |
| Val | Leu | Lys | Leu | Pro | Trp | Thr | Gln | Val | Gly | Phe | Ser | Leu | Leu | Leu | Leu | 20  | 25  | 30  |     |
| Tyr | Leu | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Ile | Arg | Val | Phe | Ile | Lys | Thr | 35  | 40  | 45  |     |
| Val | Arg | Arg | Asp | Ile | Phe | Gly | Gly | Met | Val | Leu | Leu | Lys | Val | Lys | Thr | 50  | 55  | 60  |     |
| Lys | Val | Arg | Arg | Tyr | Leu | Gln | Glu | Arg | Lys | Thr | Val | Pro | Leu | Leu | Phe | 65  | 70  | 75  | 80  |
| Ala | Ser | Met | Val | Gln | Arg | His | Pro | Asp | Lys | Thr | Ala | Leu | Ile | Phe | Glu | 85  | 90  | 95  |     |
| Gly | Thr | Asp | Thr | His | Trp | Thr | Phe | Arg | Gln | Leu | Asp | Glu | Tyr | Ser | Ser | 100 | 105 | 110 |     |
| Ser | Val | Ala | Asn | Phe | Leu | Gln | Ala | Arg | Gly | Leu | Ala | Ser | Gly | Asn | Val | 115 | 120 | 125 |     |
| Val | Ala | Leu | Phe | Met | Glu | Asn | Arg | Asn | Glu | Phe | Val | Gly | Leu | Trp | Leu | 130 | 135 | 140 |     |
| Gly | Met | Ala | Lys | Leu | Gly | Val | Glu | Ala | Ala | Leu | Ile | Asn | Thr | Asn | Leu | 145 | 150 | 155 | 160 |
| Arg | Arg | Asp | Ala | Leu | Arg | His | Cys | Leu | Asp | Thr | Ser | Lys | Ala | Arg | Ala | 165 | 170 | 175 |     |
| Leu | Ile | Phe | Gly | Ser | Glu | Met | Ala | Ser | Ala | Ile | Cys | Glu | Ile | His | Ala | 180 | 185 | 190 |     |
| Ser | Leu | Glu | Pro | Thr | Leu | Ser | Leu | Phe | Cys | Ser | Gly | Ser | Trp | Glu | Pro | 195 | 200 | 205 |     |
| Ser | Thr | Val | Pro | Val | Ser | Thr | Glu | His | Leu | Asp | Pro | Leu | Leu | Glu | Asp | 210 | 215 | 220 |     |
| Ala | Pro | Lys | His | Leu | Pro | Ser | His | Pro | Asp | Lys | Gly | Phe | Thr | Asp | Lys | 225 | 230 | 235 | 240 |
| Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | 245 | 250 | 255 |     |
| Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ser | Leu | Val | Tyr | Tyr | 260 | 265 | 270 |     |
| Gly | Phe | Arg | Met | Arg | Pro | Asp | Asp | Ile | Val | Tyr | Asp | Cys | Leu | Pro | Leu | 275 | 280 | 285 |     |
| Tyr | His | Ser | Ser | Arg | Lys | His | Arg | Gly | Asp | Trp | Gln | Cys | Leu | Leu | His | 290 | 295 | 300 |     |
| Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys | Phe | Ser | Ala | Ser | Arg | Phe | Trp | 305 | 310 | 315 | 320 |
| Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr | Ile | Gly | Glu | 325 | 330 | 335 |     |
| Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro | Pro | Arg | Glu | Ala | Glu | Ser | Arg | 340 | 345 | 350 |     |
| His | Lys | Val | Arg | Met | Ala | Leu | Gly | Asn | Gly | Leu | Arg | Gln | Ser | Ile | Trp | 355 | 360 | 365 |     |
| Thr | Asp | Phe | Ser | Ser | Arg | Phe | His | Ile | Pro | Gln | Val | Ala | Glu | Phe | Tyr | 370 | 375 | 380 |     |
| Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu | Gly | Asn | Phe | Asp | Ser | Arg | Val | 385 | 390 | 395 | 400 |
| Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Ser | Phe | Val | Tyr | Pro | Ile | 405 | 410 | 415 |     |
| Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Ile | Arg | Gly | Pro | 420 | 425 | 430 |     |
| Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Gln | Pro | Gly | Gln | Leu | Val | 435 | 440 | 445 |     |
| Gly | Arg | Ile | Ile | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp | Gly | Tyr | Leu | 450 | 455 | 460 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile | Ala | Asn | Asp | Val | Phe | Lys | Lys |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     | 480 |     |
| Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp | Val | Leu | Val | Met | Asp | Glu | Leu |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Thr | Leu | Ser | Arg | Leu |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Leu | His | Met | Ala | Asp | Val | Ala | Val | Tyr | Gly | Val | Glu | Val | Pro | Gly | Thr |
|     | 530 |     |     |     |     |     | 535 |     |     |     | 540 |     |     |     |     |
| Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val | Ala | Ser | Pro | Ile | Ser | Asn | Cys |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Asp | Leu | Glu | Ser | Phe | Ala | Gln | Thr | Leu | Lys | Lys | Glu | Leu | Pro | Leu | Tyr |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Ala | Arg | Pro | Ile | Phe | Leu | Arg | Phe | Leu | Pro | Glu | Leu | His | Lys | Thr | Gly |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Thr | Phe | Lys | Phe | Gln | Lys | Thr | Glu | Leu | Arg | Lys | Glu | Gly | Phe | Asp | Pro |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Ser | Val | Val | Lys | Asp | Pro | Leu | Phe | Tyr | Leu | Asp | Ala | Arg | Lys | Gly | Cys |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Tyr | Val | Ala | Leu | Asp | Gln | Glu | Ala | Tyr | Thr | Arg | Ile | Gln | Ala | Gly | Glu |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Glu | Lys | Leu |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 46  
 <211> 3694  
 <212> DNA  
 <213> Homo sapiens

<400> 46

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| agaagggtcc | aggagtctgc | agaaacagaa  | aggtccccgg  | cctcagcctc  | ctagtccctg  | 120  |
| cctgcctcct | gcctgagctt | ctgggagact  | gaaggcacgg  | cttgacagctt | caggatgcgg  | 180  |
| gctccgggtg | cgggcgcggc | ctcgggtggtc | tcgctggcgc  | tgttggtggct | gctggggctg  | 240  |
| ccgtggacct | ggagcgcggc | agcggcgctc  | ggcgtgtacg  | tgggcagcgg  | cggctggcgc  | 300  |
| ttcctgcgca | tcgtctgcaa | gaccgcgagg  | cgagacctct  | tcggtctctc  | tgtgctgac   | 360  |
| cgcgtgcgcc | tggagctgcg | gcggcaccag  | cgtgccggcc  | acaccatccc  | gcgcattctt  | 420  |
| caggcggtag | tgcagcgaca | gcccgcagcg  | ctggcgctgg  | tggatgccgg  | gaccggcgag  | 480  |
| tgctggacct | ttgcgcagct | ggacgcctac  | tccaatgcgg  | tagccaacct  | cttccgccag  | 540  |
| ctgggcttcg | cgcggggcga | cgtggtggcc  | atcttcctgg  | agggccggcc  | ggagttcgtg  | 600  |
| gggctgtggc | tgggcctggc | caaggcgggc  | atggaggccg  | cgctgctcaa  | cgtgaacctg  | 660  |
| cggcgcgagc | ccctggcctt | ctgcctgggc  | acctcgggcg  | ctaaggccct  | gatctttgga  | 720  |
| ggagaaatgg | tggcggcggt | ggccgaagtg  | agcgggcatc  | tggggaaaag  | tttgatcaag  | 780  |
| ttctgctctg | gagacttggg | gcccgcgggc  | atcttgccgg  | acaccacct   | cctggacccg  | 840  |
| ctgctgaagg | aggcctctac | tgcccccttg  | gcacagatcc  | ccagcaaggg  | catggacgat  | 900  |
| cgtcttttct | acatctacac | gtcggggacc  | accgggctgc  | ccaaggctgc  | cattgtcgtg  | 960  |
| cacagcaggt | actaccgcat | ggcagccttc  | ggccaccacg  | cctaccgcat  | gcaggcggct  | 1020 |
| gacgtgctct | atgactgect | gcccctgtac  | cactcggcag  | gaaacatcat  | cggcgtgggg  | 1080 |
| cagtgtctca | tctatgggct | gacagtcgtc  | ctccgcaaga  | aattctcggc  | cagccgcttc  | 1140 |
| tgggacgact | gcataagta  | caactgcacg  | gtggttcagt  | acatcgggga  | gatctgccgc  | 1200 |
| tacctgctga | agcagccggt | gcgcgagggc  | gagaggcgac  | accgcgtgcg  | cctggcggtg  | 1260 |
| gggaacgggc | tgcgtcctgc | catctgggag  | gagttcacgg  | agcgtctcgg  | cgtacgcca   | 1320 |
| atcggggagt | tctacggcgc | caccgagtg   | aactgcagca  | ttgccaacat  | ggacggcaag  | 1380 |
| gtcggctcct | gtggtttcaa | cagccgcate  | ctgccccacg  | tgtaccccat  | ccggctgggtg | 1440 |
| aaggtcaatg | aggacacaat | ggagctgctg  | cgggatgccc  | agggcctctg  | catccctctg  | 1500 |
| caggccgggg | agcctggcct | ccttgctggg  | cagatcaacc  | aacaggaccc  | gctgcgcgcg  | 1560 |
| ttcgatggct | atgtcagcga | gagcgccacc  | agcaagaaga  | tcgcccacag  | cgtcttcagc  | 1620 |
| aagggcgaca | gcgcctacct | ctcaggtgac  | gtgctagtga  | tggatgagct  | gggctacatg  | 1680 |

|             |            |             |            |             |             |      |
|-------------|------------|-------------|------------|-------------|-------------|------|
| tacttccggg  | accgtagcgg | ggacaccttc  | cgctggcgag | gggagaacgt  | ctccaccacc  | 1740 |
| gaggtggagg  | gcgtgctgag | ccgcctgctg  | ggccagacag | acgtggccgt  | ctatgggggtg | 1800 |
| gctgttccag  | gagtgaggag | taaggcaggg  | atggcgggcg | tcgcagaccc  | ccacagcctg  | 1860 |
| ctggacccca  | acgcgatata | ccaggagctg  | cagaagggtg | tggcacccta  | tgcccggccc  | 1920 |
| atcttctctg  | gcctcctgcc | ccagggtggac | accacaggca | ccttcaagat  | ccagaagacg  | 1980 |
| aggctgcagc  | gagagggctt | tgaccacacg  | cagacctcag | accggctctt  | cttcctggac  | 2040 |
| ctgaagcagg  | gccactacct | gcccttaaat  | gaggcagtct | acactcgcat  | ctgctcgggc  | 2100 |
| gccttcgccc  | tctgaagctg | ttcctctact  | ggccacaaac | tctgggcctg  | gtgggagagg  | 2160 |
| ccagcttgag  | ccagacagcg | ctgcccaggg  | gtggccgcct | agtacacacc  | cacctggccg  | 2220 |
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| ccttccatcc  | ctgtccctgt | ctggccttaa  | ctcttccctc | tctttctttt  | ctttctttct  | 2400 |
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| ctcggctcac  | tgcaacctct | gcctcctggg  | gttcaagtga | tcctcccacc  | tcagcctcct  | 2520 |
| gagtagctgg  | gattacaggc | acccgccacc  | acgtccagct | aattttttata | tttttagtag  | 2580 |
| agacgggggt  | tcaccatgtt | ggtcaggctg  | gtcttgaact | cctgacctca  | ggtgatccgc  | 2640 |
| tggcctcggc  | ctcccagagt | gctgggatta  | taggcgtgag | cctctggccc  | ggccttttct  | 2700 |
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| gaacatccac  | gccagccttt | ctggggccgg  | ccaccagggc | cgctgtccg   | tctgtcctcc  | 3540 |
| ctccagcagc  | accccctggc | ccctggagtg  | gtggggccat | ggcaagagac  | accgtggcgt  | 3600 |
| ctcatgtgaa  | ctttcctggg | cactgtggtt  | ttatttccta | attgatttaa  | gaaataaacc  | 3660 |
| tgaagaccgt  | ctggtgaaaa | aaaaaaaaaa  | aaaa       |             |             | 3694 |

&lt;210&gt; 47

&lt;211&gt; 646

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 47

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Ala | Pro | Gly | Ala | Gly | Ala | Ala | Ser | Val | Val | Ser | Leu | Ala | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu | Trp | Leu | Leu | Gly | Leu | Pro | Trp | Thr | Trp | Ser | Ala | Ala | Ala | Ala | Leu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly | Val | Tyr | Val | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Leu | Arg | Ile | Val | Cys |
|     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |     |
| Lys | Thr | Ala | Arg | Arg | Asp | Leu | Phe | Gly | Leu | Ser | Val | Leu | Ile | Arg | Val |
|     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |     |
| Arg | Leu | Glu | Leu | Arg | Arg | His | Gln | Arg | Ala | Gly | His | Thr | Ile | Pro | Arg |
| 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |
| Ile | Phe | Gln | Ala | Val | Val | Gln | Arg | Gln | Pro | Glu | Arg | Leu | Ala | Leu | Val |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |     |
| Asp | Ala | Gly | Thr | Gly | Glu | Cys | Trp | Thr | Phe | Ala | Gln | Leu | Asp | Ala | Tyr |
|     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |     |
| Ser | Asn | Ala | Val | Ala | Asn | Leu | Phe | Arg | Gln | Leu | Gly | Phe | Ala | Pro | Gly |
|     | 115 |     |     |     | 120 |     |     |     |     |     | 125 |     |     |     |     |
| Asp | Val | Val | Ala | Ile | Phe | Leu | Glu | Gly | Arg | Pro | Glu | Phe | Val | Gly | Leu |
|     | 130 |     |     |     | 135 |     |     |     |     |     | 140 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Leu | Gly | Leu | Ala | Lys | Ala | Gly | Met | Glu | Ala | Ala | Leu | Leu | Asn | Val | 145 | 150 | 155 | 160 |
| Asn | Leu | Arg | Arg | Glu | Pro | Leu | Ala | Phe | Cys | Leu | Gly | Thr | Ser | Gly | Ala | 165 | 170 | 175 |     |
| Lys | Ala | Leu | Ile | Phe | Gly | Gly | Glu | Met | Val | Ala | Ala | Val | Ala | Glu | Val | 180 | 185 | 190 |     |
| Ser | Gly | His | Leu | Gly | Lys | Ser | Leu | Ile | Lys | Phe | Cys | Ser | Gly | Asp | Leu | 195 | 200 | 205 |     |
| Gly | Pro | Glu | Gly | Ile | Leu | Pro | Asp | Thr | His | Leu | Leu | Asp | Pro | Leu | Leu | 210 | 215 | 220 |     |
| Lys | Glu | Ala | Ser | Thr | Ala | Pro | Leu | Ala | Gln | Ile | Pro | Ser | Lys | Gly | Met | 225 | 230 | 235 | 240 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | 245 | 250 | 255 |     |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ala | Phe | 260 | 265 | 270 |     |
| Gly | His | His | Ala | Tyr | Arg | Met | Gln | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys | 275 | 280 | 285 |     |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Ile | Gly | Val | Gly | Gln | Cys | 290 | 295 | 300 |     |
| Leu | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser | 305 | 310 | 315 | 320 |
| Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr | 325 | 330 | 335 |     |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Lys | Gln | Pro | Val | Arg | Glu | Ala | 340 | 345 | 350 |     |
| Glu | Arg | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro | 355 | 360 | 365 |     |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Glu | Arg | Phe | Gly | Val | Arg | Gln | Ile | Gly | 370 | 375 | 380 |     |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp | 385 | 390 | 395 | 400 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Pro | His | Val | 405 | 410 | 415 |     |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Leu | 420 | 425 | 430 |     |
| Arg | Asp | Ala | Gln | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Ala | Gly | Glu | Pro | Gly | 435 | 440 | 445 |     |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp | 450 | 455 | 460 |     |
| Gly | Tyr | Val | Ser | Glu | Ser | Ala | Thr | Ser | Lys | Lys | Ile | Ala | His | Ser | Val | 465 | 470 | 475 | 480 |
| Phe | Ser | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met | 485 | 490 | 495 |     |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe | 500 | 505 | 510 |     |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Val | Leu | 515 | 520 | 525 |     |
| Ser | Arg | Leu | Leu | Gly | Gln | Thr | Asp | Val | Ala | Val | Tyr | Gly | Val | Ala | Val | 530 | 535 | 540 |     |
| Pro | Gly | Val | Glu | Gly | Lys | Ala | Gly | Met | Ala | Ala | Val | Ala | Asp | Pro | His | 545 | 550 | 555 | 560 |
| Ser | Leu | Leu | Asp | Pro | Asn | Ala | Ile | Tyr | Gln | Glu | Leu | Gln | Lys | Val | Leu | 565 | 570 | 575 |     |
| Ala | Pro | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Gln | Val | Asp | 580 | 585 | 590 |     |
| Thr | Thr | Gly | Thr | Phe | Lys | Ile | Gln | Lys | Thr | Arg | Leu | Gln | Arg | Glu | Gly | 595 | 600 | 605 |     |

Phe Asp Pro Arg Gln Thr Ser Asp Arg Leu Phe Phe Leu Asp Leu Lys  
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 625 630 635 640  
 Ser Gly Ala Phe Ala Leu  
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<400> 49

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Ser | Ala | Ile | Tyr | Thr | Val | Leu | Ala | Gly | Leu | Leu | Phe | Leu | Pro |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu | Leu | Val | Asn | Leu | Cys | Cys | Pro | Tyr | Phe | Phe | Gln | Asp | Ile | Gly | Tyr |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Leu | Lys | Val | Ala | Ala | Val | Gly | Arg | Arg | Val | Arg | Ser | Tyr | Gly | Gln |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Arg | Arg | Pro | Ala | Arg | Thr | Ile | Leu | Arg | Ala | Phe | Leu | Glu | Lys | Ala | Arg |
|     |     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Gln | Thr | Pro | His | Lys | Pro | Phe | Leu | Leu | Phe | Arg | Asp | Glu | Thr | Leu | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Tyr | Ala | Gln | Val | Asp | Arg | Arg | Ser | Asn | Gln | Val | Ala | Arg | Ala | Leu | His |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | His | Leu | Gly | Leu | Arg | Gln | Gly | Asp | Cys | Val | Ala | Leu | Leu | Met | Gly |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Glu | Pro | Ala | Tyr | Val | Trp | Leu | Trp | Leu | Gly | Leu | Val | Lys | Leu | Gly |
|     |     |     | 115 |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Cys | Ala | Met | Ala | Cys | Leu | Asn | Tyr | Asn | Ile | Arg | Ala | Lys | Ser | Leu | Leu |
|     |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| His | Cys | Phe | Gln | Cys | Cys | Gly | Ala | Lys | Val | Leu | Leu | Val | Ser | Pro | Glu |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Leu | Gln | Ala | Ala | Val | Glu | Glu | Ile | Leu | Pro | Ser | Leu | Lys | Lys | Asp | Asp |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Val | Ser | Ile | Tyr | Tyr | Val | Ser | Arg | Thr | Ser | Asn | Thr | Asp | Gly | Ile | Asp |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Ser | Phe | Leu | Asp | Lys | Val | Asp | Glu | Val | Ser | Thr | Glu | Pro | Ile | Pro | Glu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ser | Trp | Arg | Ser | Glu | Val | Thr | Phe | Ser | Thr | Pro | Ala | Leu | Tyr | Ile | Tyr |
|     |     | 210 |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Met | Ile | Thr | His | Gln |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Arg | Ile | Trp | Tyr | Gly | Thr | Gly | Leu | Thr | Phe | Val | Ser | Gly | Leu | Lys | Ala |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asp | Asp | Val | Ile | Tyr | Ile | Thr | Leu | Pro | Phe | Tyr | His | Ser | Ala | Ala | Leu |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Leu | Ile | Gly | Ile | His | Gly | Cys | Ile | Val | Ala | Gly | Ala | Thr | Leu | Ala | Leu |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Arg | Thr | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Asp | Asp | Cys | Arg | Lys | Tyr |
|     |     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Asn | Val | Thr | Val | Ile | Gln | Tyr | Ile | Gly | Glu | Leu | Leu | Arg | Tyr | Leu | Cys |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asn | Ser | Pro | Gln | Lys | Pro | Asn | Asp | Arg | Asp | His | Lys | Val | Arg | Leu | Ala |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Leu | Gly | Asn | Gly | Leu | Arg | Gly | Asp | Val | Trp | Arg | Gln | Phe | Val | Lys | Arg |
|     |     |     | 340 |     |     |     | 345 |     |     |     |     |     | 350 |     |     |
| Phe | Gly | Asp | Ile | Cys | Ile | Tyr | Glu | Phe | Tyr | Ala | Ala | Thr | Glu | Gly | Asn |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ile | Gly | Phe | Met | Asn | Tyr | Ala | Arg | Lys | Val | Gly | Ala | Val | Gly | Arg | Val |
|     |     | 370 |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Asn | Tyr | Leu | Gln | Lys | Lys | Ile | Ile | Thr | Tyr | Asp | Leu | Ile | Lys | Tyr | Asp |
| 385 |     |     |     | 390 |     |     |     |     |     | 395 |     |     |     |     | 400 |
| Val | Glu | Lys | Asp | Glu | Pro | Val | Arg | Asp | Glu | Asn | Gly | Tyr | Cys | Val | Arg |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Val | Pro | Lys | Gly | Glu | Val | Gly | Leu | Leu | Val | Cys | Lys | Ile | Thr | Gln | Leu |
|     |     |     | 420 |     |     |     | 425 |     |     |     |     |     | 430 |     |     |
| Thr | Pro | Phe | Asn | Gly | Tyr | Ala | Gly | Ala | Lys | Ala | Gln | Thr | Glu | Lys | Lys |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Lys | Leu | Arg | Asp | Val | Phe | Lys | Lys | Gly | Asp | Leu | Tyr | Phe | Asn | Ser | Gly |
|     |     | 450 |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |

Asp Leu Leu Met Val Asp His Glu Asn Phe Ile Tyr Phe His Asp Arg  
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 Val Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Glu  
 485 490 495  
 Val Ala Asp Thr Val Gly Leu Val Asp Phe Val Gln Glu Val Asn Val  
 500 505 510  
 Tyr Gly Val His Val Pro Asp His Glu Gly Arg Ile Gly Met Ala Ser  
 515 520 525  
 Ile Lys Met Lys Glu Asn His Glu Phe Asp Gly Lys Lys Leu Phe Gln  
 530 535 540  
 His Ile Ala Asp Tyr Leu Pro Ser Tyr Ala Arg Pro Arg Phe Leu Arg  
 545 550 555 560  
 Ile Gln Asp Thr Ile Glu Ile Thr Gly Thr Phe Lys His Arg Lys Met  
 565 570 575  
 Thr Leu Val Glu Glu Gly Phe Asn Pro Ala Val Ile Lys Asp Ala Leu  
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 <212> PRT  
 <213> Homo sapiens

<400> 51  
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Pro Pro Ser Lys Ala Glu Arg Gly His Lys Val Arg Leu Ala Val Gly  
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 Ser Gly Leu Arg Pro Asp Thr Trp Glu Arg Phe Val Arg Arg Phe Gly  
       50                          55                          60  
 Pro Leu Gln Val Leu Glu Thr Tyr Gly Leu Thr Glu Gly Asn Val Ala  
 65                          70                          75                          80  
 Thr Ile Asn Tyr Thr Gly Gln Arg Gly Ala Val Gly Arg Ala Ser Trp  
           85                          90                          95  
 Leu Tyr Lys His Ile Phe Pro Phe Ser Leu Ile Arg Tyr Asp Val Thr  
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 Thr Gly Glu Pro Ile Arg Asp Pro Gln Gly His Cys Met Ala Thr Ser  
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 Pro Gly Glu Pro Gly Leu Leu Val Ala Pro Val Ser Gln Gln Ser Pro  
       130                          135                          140  
 Phe Leu Gly Tyr Ala Gly Gly Pro Glu Leu Ala Gln Gly Lys Leu Leu  
 145                          150                          155                          160  
 Lys Asp Val Phe Arg Pro Gly Asp Val Phe Phe Asn Thr Gly Asp Leu  
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 Leu Val Cys Asp Asp Gln Gly Phe Leu Arg Phe His Asp Arg Thr Gly  
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 Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Glu Val Ala  
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 Glu Val Phe Glu Ala Leu Asp Phe Leu Gln Glu Val Asn Val Tyr Gly  
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 Leu Arg Pro Pro His Ala Leu Asp Leu Met Gln Leu Tyr Thr His Val  
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 Ser Glu Asn Leu Pro Pro Tyr Ala Arg Pro Arg Phe Leu Arg Leu Gln  
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 Glu Ser Leu Ala Thr Thr Glu Thr Phe Lys Gln Gln Lys Val Arg Met  
       275                          280                          285  
 Ala Asn Glu Gly Phe Asp Pro Ser Thr Leu Ser Asp Pro Leu Tyr Val  
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 Leu Asp Gln Ala Val Gly Ala Tyr Leu Pro Leu Thr Thr Ala Arg Tyr  
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 <212> DNA  
 <213> Homo sapiens

<400> 52

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| ggctaattgcc | cctcacgctg  | tctacgctgc  | tgcaaccggg | ccgcatctgg | acggggcgcc  | 180 |
| gcgcggcgga  | gccgacgccg  | ggccacaatg  | ctgcttgagg | cctctctggt | gggggtgctg  | 240 |
| ctgtttctcca | agctggtgct  | gaaactgccc  | tggaccagg  | tgggattctc | cctgttgctc  | 300 |
| ctctacttgg  | gatctggcgg  | ctggcgcttc  | atccgggtct | tcatcaagac | catcaggcgc  | 360 |
| gatattctttg | gcggcctggt  | cctcctgaag  | gtgaaggcaa | aggtgcgaca | gtgcctgcag  | 420 |
| gagcggcgga  | cagtgcccat  | tttgtttgcc  | tctaccgttc | ggcgccaccc | cgacaagacg  | 480 |
| gccctgatct  | tcgagggcac  | agatacccac  | tggaccttcc | gccagctgga | tgagtactca  | 540 |
| agcagtgtag  | caaacttcct  | gcaggccccg  | ggcctggcct | cgggcgatgt | ggctgccatc  | 600 |
| ttcatggga   | accgcaatga  | gttcgtgggc  | ctatggctgg | gcatggccaa | gctcgggtgtg | 660 |
| gaggcagccc  | tcataaacac  | caacctgcgg  | cgggatgctc | tgctccactg | cctcaccacc  | 720 |
| tcgcgcgcac  | gggcccttgt  | ctttggcagc  | gaaatggcct | cagccatctg | tgaggtccat  | 780 |
| gccagcctgg  | accctcgcct  | cagcctcttc  | tgccttggt  | cctgggagcc | cggtgcggtg  | 840 |

|            |            |            |            |            |             |      |
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| tgccctgaca | agggcttcac | agataaactg | ttctacatct | acacatccgg | caccacaggg  | 960  |
| ctgccaaggg | cgcctatcgt | ggtgcacagc | aggtattacc | gcatggctgc | cctgggtgtac | 1020 |
| tatggattcc | gcatgcgggc | caacgacatc | gtctatgact | gcctccccct | ctaccactca  | 1080 |
| gcaggaaaca | tcgtgggaat | cggccagtg  | ctgctgcatg | gcatgacggg | ggtgattcgg  | 1140 |
| aagaagttct | cagcctcccc | gttctgggac | gattgtatca | agtacaactg | cacgattgtg  | 1200 |
| cagtacattg | gtgaactgtg | ccgctacctc | ctgaaccagc | caccgcggga | ggcagaaaac  | 1260 |
| cagcaccagg | ttcgcattgg | actaggcaat | ggcctccggc | agtccatctg | gaccaacttt  | 1320 |
| tccagccgct | tccacatacc | ccaggtgggt | gagttctacg | gggccacaga | gtgcaactgt  | 1380 |
| agcctgggca | acttcgacag | ccaggtgggg | gcctgtgggt | tcaatagccg | catcctgtcc  | 1440 |
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| cccgcggcg  | tctgcattcc | ctgccagcca | ggtgagccgg | gccagctggt | gggccgcatc  | 1560 |
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| aaaggtgaga | acgtgtccac | caccgaggtg | gaaggcacac | tcagccgcct | gctggacatg  | 1800 |
| gctgacgtgg | ccgtgtatgg | tgctgaggtg | ccaggaaccg | agggccgggc | cggaatggct  | 1860 |
| gctgtggcca | gccccactgg | caactgtgac | ctggagcgct | ttgctcaggt | cttggagaag  | 1920 |
| gaactgcccc | tgtatgcg   | ccccatcttc | ctgcgcctcc | tgctgagct  | gcacaaaaca  | 1980 |
| ggaacctaca | agttccagaa | gacagagcta | cggaaggagg | gctttgacct | ggctattgtg  | 2040 |
| aaagaccgcg | tggtctatct | agatgccag  | aagggccgct | acgtcccgc  | ggaccaagag  | 2100 |
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| aagtcccgct | ttctgggctg | ggcaggccct | ctggttccca | ggctgagact | gacgggtttt  | 2400 |
| ctcaggatga | tgtcttgggt | gagggtaggg | agaggacaag | gggtcaccga | gcccttccca  | 2460 |
| gagagcaggg | agcttataaa | tggaaccaga | gcagaagtcc | ccagactcag | gaagtcaaca  | 2520 |
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| gaatgggaga | gggggctcag | gggccaataa | actctgcctt | gagtcctcct | aaaaaaaaaa  | 2880 |
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| Met | Leu | Leu | Gly | Ala | Ser | Leu | Val | Gly | Val | Leu | Leu | Phe | Ser | Lys | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Val | Leu | Lys | Leu | Pro | Trp | Thr | Gln | Val | Gly | Phe | Ser | Leu | Leu | Phe | Leu |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Tyr | Leu | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Ile | Arg | Val | Phe | Ile | Lys | Thr |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Ile | Arg | Arg | Asp | Ile | Phe | Gly | Gly | Leu | Val | Leu | Leu | Lys | Val | Lys | Ala |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Val | Arg | Gln | Cys | Leu | Gln | Glu | Arg | Arg | Thr | Val | Pro | Ile | Leu | Phe |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Ala | Ser | Thr | Val | Arg | Arg | His | Pro | Asp | Lys | Thr | Ala | Leu | Ile | Phe | Glu |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Gly | Thr | Asp | Thr | His | Trp | Thr | Phe | Arg | Gln | Leu | Asp | Glu | Tyr | Ser | Ser |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     | 110 |     |
| Ser | Val | Ala | Asn | Phe | Leu | Gln | Ala | Arg | Gly | Leu | Ala | Ser | Gly | Asp | Val |
|     | 115 |     |     |     |     |     | 120 |     |     |     |     |     |     | 125 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Ala | Ala | Ile | Phe | Met | Glu | Asn | Arg | Asn | Glu | Phe | Val | Gly | Leu | Trp | Leu |  |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |  |
| Gly | Met | Ala | Lys | Leu | Gly | Val | Glu | Ala | Ala | Leu | Ile | Asn | Thr | Asn | Leu |  |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |  |
| Arg | Arg | Asp | Ala | Leu | Leu | His | Cys | Leu | Thr | Thr | Ser | Arg | Ala | Arg | Ala |  |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |  |
| Leu | Val | Phe | Gly | Ser | Glu | Met | Ala | Ser | Ala | Ile | Cys | Glu | Val | His | Ala |  |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |
| Ser | Leu | Asp | Pro | Ser | Leu | Ser | Leu | Phe | Cys | Ser | Gly | Ser | Trp | Glu | Pro |  |  |
|     | 195 |     |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |
| Gly | Ala | Val | Pro | Pro | Ser | Thr | Glu | His | Leu | Asp | Pro | Leu | Leu | Lys | Asp |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |
| Ala | Pro | Lys | His | Leu | Pro | Ser | Cys | Pro | Asp | Lys | Gly | Phe | Thr | Asp | Lys |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |
| Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |  |
| Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Met | Ala | Ala | Leu | Val | Tyr | Tyr |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |  |
| Gly | Phe | Arg | Met | Arg | Pro | Asn | Asp | Ile | Val | Tyr | Asp | Cys | Leu | Pro | Leu |  |  |
|     | 275 |     |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |  |  |
| Tyr | His | Ser | Ala | Gly | Asn | Ile | Val | Gly | Ile | Gly | Gln | Cys | Leu | Leu | His |  |  |
|     | 290 |     |     |     | 295 |     |     |     |     |     | 300 |     |     |     |     |  |  |
| Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys | Phe | Ser | Ala | Ser | Arg | Phe | Trp |  |  |
| 305 |     |     |     |     | 310 |     |     |     | 315 |     |     |     |     |     | 320 |  |  |
| Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr | Ile | Val | Gln | Tyr | Ile | Gly | Glu |  |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |  |
| Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro | Arg | Glu | Ala | Glu | Asn | Gln |     |  |  |
|     |     |     | 340 |     |     |     | 345 |     |     |     |     | 350 |     |     |     |  |  |
| His | Gln | Val | Arg | Met | Ala | Leu | Gly | Asn | Gly | Leu | Arg | Gln | Ser | Ile | Trp |  |  |
|     | 355 |     |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |  |
| Thr | Asn | Phe | Ser | Ser | Arg | Phe | His | Ile | Pro | Gln | Val | Ala | Glu | Phe | Tyr |  |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |  |
| Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu | Gly | Asn | Phe | Asp | Ser | Gln | Val |  |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |  |
| Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Ser | Phe | Val | Tyr | Pro | Ile |  |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |  |
| Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr | Met | Glu | Leu | Ile | Arg | Gly | Pro |  |  |
|     |     |     |     | 420 |     |     |     | 425 |     |     |     |     | 430 |     |     |  |  |
| Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Glu | Pro | Gly | Gln | Leu | Val |  |  |
|     | 435 |     |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |  |
| Gly | Arg | Ile | Ile | Gln | Lys | Asp | Pro | Leu | Arg | Arg | Phe | Asp | Gly | Tyr | Leu |  |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |  |
| Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile | Ala | Lys | Asp | Val | Phe | Lys | Lys |  |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |  |
| Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp | Val | Leu | Val | Met | Asp | Glu | Leu |  |  |
|     |     |     |     | 485 |     |     |     | 490 |     |     |     |     |     | 495 |     |  |  |
| Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys |  |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |  |
| Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Gly | Thr | Leu | Ser | Arg | Leu |  |  |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |  |
| Leu | Asp | Met | Ala | Asp | Val | Ala | Val | Tyr | Gly | Val | Glu | Val | Pro | Gly | Thr |  |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |  |
| Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val | Ala | Ser | Pro | Thr | Gly | Asn | Cys |  |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |  |
| Asp | Leu | Glu | Arg | Phe | Ala | Gln | Val | Leu | Glu | Lys | Glu | Leu | Pro | Leu | Tyr |  |  |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |  |  |
| Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Glu | Leu | His | Lys | Thr | Gly |  |  |
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[illegible]

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<211> 1248
<212> DNA
<213> Homo sapiens
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<222> (1)...(1248)
<223> n = A,T,C or G
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| tctacttcct  | gcttctggga | tgactgtcgg  | cagcatggcg | tgacagtgat  | cctgtatgtg  | 120  |
| ggcgagctcc  | tgcgataact | gtgtaacatt  | ccccagcaac | cagaggaccg  | gacacataca  | 180  |
| gtccgcctgg  | caatgggcaa | tggactacgg  | gctgatgtgt | ggggagacct  | tccagcagcg  | 240  |
| tttcggctct  | atttcggatc | tngggaagtc  | ttacgggctt | cccagaaagg  | gcaacatggg  | 300  |
| gctttagttc  | aaatatgttt | ggggggcgctg | cggggccctg | gggggcaaaga | tggagcttgc  | 360  |
| ctcctccgaa  | tgtgtgtccc | ctttgagctg  | gtgcagttcg | acatggaggc  | ggcggagcct  | 420  |
| gtgagggaca  | atcagggtct | ctgcacccct  | gtagggctag | gggagccggg  | gctgctgttg  | 480  |
| accaaggtgg  | taagccagca | acccttcctg  | ggctaccgcg | gcccccgaga  | gctgtcggaa  | 540  |
| cggaagctgg  | tgcgcaacgt | gcggcaatcg  | ggcgacgttt | actacaacac  | cggggacgta  | 600  |
| ctggccatgg  | accgcgaagg | cttcctctac  | ttccgcgacc | gactcgggga  | caccttccga  | 660  |
| tggaagggcg  | agaacgtgtc | cacgcacgag  | gtggaggcg  | gtgttcgca   | ggtggacttc  | 720  |
| ttgcaacagg  | ttaacgtgta | tggcgtgtgc  | gtgccaggtt | gtgagggtaa  | ggtgggcatg  | 780  |
| gctgctgtgg  | cattagcccc | cggccagact  | ttcgacgggg | agaagttgta  | ccagcacgtt  | 840  |
| cgcgcttggc  | tccttgccct | cgctaccccc  | catttcaccc | gcacccagga  | cgccatggag  | 900  |
| gtcaccagca  | cgttcaaact | gatgaagacc  | cggttggtgc | gtgagggtct  | caatgtgggg  | 960  |
| atcgtggttg  | accctctgtt | tgtactggac  | aaccggggcc | agtccttccg  | gcccctgacg  | 1020 |
| gcagaaatgt  | accaggctgt | gtgtgagggg  | acctggaggc | tctgatcacc  | tggccaaccc  | 1080 |
| actggggtag  | ggatcaaagc | cagccacccc  | caccccaaca | cactcgtgtg  | ccctttcatc  | 1140 |
| ctgggcctgt  | gtgaatccca | gcctggccat  | accctcaacc | tcagttgggt  | ggaaatgaca  | 1200 |
| gtgggcccctg | tagcagtggt | agaataaact  | cagmtgygtt | cacagaaa    |             | 1248 |

```
<210> 55
<211> 354
<212> PRT
<213> Homo sapiens
```

```
<220>  
<221> VARIANT  
<222> (1)...(354)  
<223> Xaa = Any Amino Acid
```

|                                                   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <div> <div>&lt;400&gt;</div> <div>55</div> </div> |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Val                                               | Val | Gly | Ile | Leu | Gly | Cys | Leu | Asp | Leu | Gly | Ala | Thr | Cys | Val | Leu |
| 1                                                 |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ala                                               | Pro | Lys | Phe | Ser | Thr | Ser | Cys | Phe | Trp | Asp | Asp | Cys | Arg | Gln | His |
|                                                   |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly                                               | Val | Thr | Val | Ile | Leu | Tyr | Val | Gly | Glu | Leu | Leu | Arg | Tyr | Leu | Cys |
|                                                   |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

Asn Ile Pro Gln Gln Pro Glu Asp Arg Thr His Thr Val Arg Leu Ala  
 50 55 60  
 Met Gly Asn Gly Leu Arg Ala Asp Val Trp Gly Asp Leu Pro Ala Ala  
 65 70 75 80  
 Phe Arg Ser Tyr Phe Gly Ser Xaa Glu Val Leu Arg Ala Ser Thr Glu  
 85 90 95  
 Gly Gln His Gly Ala Leu Val Gln Ile Leu Leu Gly Ala Leu Arg Gly  
 100 105 110  
 Pro Gly Gly Lys Asp Gly Ala Cys Leu Leu Arg Met Leu Ser Pro Phe  
 115 120 125  
 Glu Leu Val Gln Phe Asp Met Glu Ala Ala Glu Pro Val Arg Asp Asn  
 130 135 140  
 Gln Gly Phe Cys Ile Pro Val Gly Leu Gly Glu Pro Gly Leu Leu Leu  
 145 150 155 160  
 Thr Lys Val Val Ser Gln Gln Pro Phe Val Gly Tyr Arg Gly Pro Arg  
 165 170 175  
 Glu Leu Ser Glu Arg Lys Leu Val Arg Asn Val Arg Gln Ser Gly Asp  
 180 185 190  
 Val Tyr Tyr Asn Thr Gly Asp Val Leu Ala Met Asp Arg Glu Gly Phe  
 195 200 205  
 Leu Tyr Phe Arg Asp Arg Leu Gly Asp Thr Phe Arg Trp Lys Gly Glu  
 210 215 220  
 Asn Val Ser Thr His Glu Val Glu Gly Val Leu Ser Gln Val Asp Phe  
 225 230 235 240  
 Leu Gln Gln Val Asn Val Tyr Gly Val Cys Val Pro Gly Cys Glu Gly  
 245 250 255  
 Lys Val Gly Met Ala Ala Val Ala Leu Ala Pro Gly Gln Thr Phe Asp  
 260 265 270  
 Gly Glu Lys Leu Tyr Gln His Val Arg Ala Trp Leu Pro Ala Tyr Ala  
 275 280 285  
 Thr Pro His Phe Ile Arg Ile Gln Asp Ala Met Glu Val Thr Ser Thr  
 290 295 300  
 Phe Lys Leu Met Lys Thr Arg Leu Val Arg Glu Gly Phe Asn Val Gly  
 305 310 315 320  
 Ile Val Val Asp Pro Leu Phe Val Leu Asp Asn Arg Ala Gln Ser Phe  
 325 330 335  
 Arg Pro Leu Thr Ala Glu Met Tyr Gln Ala Val Cys Glu Gly Thr Trp  
 340 345 350  
 Arg Leu

&lt;210&gt; 56

&lt;211&gt; 2885

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 56

|            |            |            |            |            |             |     |
|------------|------------|------------|------------|------------|-------------|-----|
| aacggcaagt | aagcgcaacg | caattaatgt | gagtagctca | ctcattaggc | accccaggct  | 60  |
| ttacacttta | tgcttcgagg | ctcgatatgt | gtgtggaatt | gtgagcggat | accaatttca  | 120 |
| cacaggaacc | agctatgaca | tgattacgaa | tttaatacga | ctcactatag | ggaatttggc  | 180 |
| cctcgaggcc | aagaattcgg | cacgaggggt | gctgagcccc | tgcgcggttt | ctgggtgcgta | 240 |
| gagactgtaa | atcgctgcgc | ttctcagtca | tcatcatccc | agcttttccc | ggctcgaatt  | 300 |
| cagcctccaa | ctcaagctcg | cgggaaagac | tacctgagag | gagaaaagct | tctgtccctg  | 360 |
| gaccttcttc | tgagggtgga | gtcggaggct | ccctgctttc | cagccgcca  | gtgacccaag  | 420 |
| cttaattctc | agcaccactt | ggggcgacct | tttcggtgca | aacctacgat | tctgtttctc  | 480 |
| aggattcctc | cccattccgc | ttcgccccgg | aaaagctgac | aagaacttca | ggtgtaagcc  | 540 |
| ctgagtagtg | aggatctgcg | gtctccgtgg | agagctgtgc | ctggaagaga | aggacgctgg  | 600 |
| tgggggctga | gatcagagct | gtcttctggc | ccagttgccc | ccatgcttct | gtcatggcta  | 660 |
| acagttctag | gggctggaat | ggtcgtcctg | cacttcttgc | agaaactcct | gttccttac   | 720 |

|             |             |             |            |            |             |      |
|-------------|-------------|-------------|------------|------------|-------------|------|
| ttttgggatg  | acttctgggt  | cgtgttgaag  | gtggtgctca | ttataattcg | gctgaagaag  | 780  |
| tatgaaaaga  | gaggggagct  | ggtgactgtg  | ctggataaat | tcttgagtca | tgccaaaaga  | 840  |
| caacctcgga  | aacctttcat  | catctatgag  | ggagacatct | acacctatca | ggatgtagac  | 900  |
| aaaaggagca  | gcagagtggc  | ccatgtcttc  | ctgaaccatt | cctctctgaa | aaaggggggac | 960  |
| acggtggctc  | tgctgatgag  | caatgagccg  | gacttcgttc | acgtgtgggt | cggcctcgcc  | 1020 |
| aagctgggct  | gcgtgggtggc | ctttctcaac  | accaacattc | gctccaactc | cctcctgaat  | 1080 |
| tgcattccgcg | cctgtggggc  | cagagcccta  | gtggtgggcg | cagatttgct | tggaaacggta | 1140 |
| gaagaaatcc  | ttccaagcct  | ctcagaaaaat | atcagtgttt | gggggatgaa | agattctgtt  | 1200 |
| ccacaagggtg | taatttctact | caaagaaaaa  | ctgagcacct | cacctgatga | gcccgtgcca  | 1260 |
| cgcagccacc  | atgttgtctc  | actcctcaag  | tctacttgtc | tttacatttt | tacctctgga  | 1320 |
| acaacaggtc  | taccaaagc   | agctgtgatt  | agtcagctgc | aggttttaag | gggttctgct  | 1380 |
| gtcctgtggg  | cttttggttg  | tactgtcat   | gacattgttt | atataaccct | tcctctgtat  | 1440 |
| catagttcag  | cagctatcct  | gggaatttct  | ggatgtgttg | agttgggtgc | cacttgtgtg  | 1500 |
| ttaaagaaga  | aattttcagc  | aagccagttt  | tggagtgact | gcaagaagta | tgatgtgact  | 1560 |
| gtgtttcagt  | atattggaga  | actttgtcgc  | tacctttgca | aacaatctaa | gagagaagga  | 1620 |
| gaaaaggatc  | ataaggtgcg  | tttggcaatt  | ggaaatggca | tacggagtga | tgtatggaga  | 1680 |
| gaatttttag  | acagatttgg  | aaatataaag  | gtgtgtgaac | tttatgcagc | taccgaatca  | 1740 |
| agcatatctt  | tcatgaacta  | cactgggaga  | attggagcaa | ttgggagaac | aaatttgttt  | 1800 |
| tacaaacttc  | tttccacttt  | tgacttaata  | aagtatgact | ttcagaaaga | tgaacccatg  | 1860 |
| agaaatgagc  | aggggttggtg | tattcatgtg  | aaaaaaggag | aacctggact | tctcatttct  | 1920 |
| cgagtgaatg  | caaaaaatcc  | cttctttggc  | tatgctgggc | cttataagca | cacaaaagac  | 1980 |
| aaattgcttt  | gtgatgtttt  | taagaaggga  | gatgtttacc | ttaatactgg | agacttaata  | 2040 |
| gtccaggatc  | aggacaattt  | cctttatttt  | tgggaccgta | ctggagacac | tttcagatgg  | 2100 |
| aaaggagaaa  | atgtcgcaac  | cactgagggt  | gctgatgtta | ttggaatgtt | ggatttcata  | 2160 |
| caggaagcaa  | acgtctatgg  | tgtggctata  | tcaggttatg | aaggaagagc | aggaatggct  | 2220 |
| tctattattt  | taaaaccaa   | tacatcttta  | gatttggaaa | aagtttatga | acaagtgtga  | 2280 |
| acatttctac  | cagcttatgc  | ttgtccacga  | tttttaagaa | ttcaggaaaa | aatggaagca  | 2340 |
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| atttctgaac  | cactttactt  | catggataac  | ttgaaaaagt | cttatgttct | actgaccagg  | 2460 |
| gaactttatg  | atcaaataat  | gttaggggaa  | ataaaacttt | aagattttta | tatctagaac  | 2520 |
| tttcatatgc  | tttcttagga  | agagtggagag | gggggtatat | gattctttat | gaaatgggga  | 2580 |
| aagggagcta  | acattaatta  | tgcatgtact  | atatttcctt | aatatgagag | ataatttttt  | 2640 |
| aattgcataa  | gaattttaat  | ttcttttaat  | tgatataaac | attagtgtat | tattcttttt  | 2700 |
| atctatttgg  | agattcagtg  | cataactaag  | tattttcctt | aatactaaag | atttttaata  | 2760 |
| ataaatagtg  | gctagcgggt  | tggacaatca  | ctaaaaatgt | acttttcta  | aagtaaaatt  | 2820 |
| tctaattttg  | aataaaaagat | taaattttac  | tgaaaaaaaa | aaaaaaaaaa | aaaattggcg  | 2880 |
| gccgc       |             |             |            |            |             | 2885 |

&lt;210&gt; 57

&lt;211&gt; 619

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 57

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Leu | Ser | Trp | Leu | Thr | Val | Leu | Gly | Ala | Gly | Met | Val | Val | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| His | Phe | Leu | Gln | Lys | Leu | Leu | Phe | Pro | Tyr | Phe | Trp | Asp | Asp | Phe | Trp |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Val | Leu | Lys | Val | Val | Leu | Ile | Ile | Arg | Leu | Lys | Lys | Tyr | Glu |     |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Lys | Arg | Gly | Glu | Leu | Val | Thr | Val | Leu | Asp | Lys | Phe | Leu | Ser | His | Ala |
|     |     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Arg | Gln | Pro | Arg | Lys | Pro | Phe | Ile | Ile | Tyr | Glu | Gly | Asp | Ile | Tyr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Thr | Tyr | Gln | Asp | Val | Asp | Lys | Arg | Ser | Ser | Arg | Val | Ala | His | Val | Phe |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Asn | His | Ser | Ser | Leu | Lys | Lys | Gly | Asp | Thr | Val | Ala | Leu | Leu | Met |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     | 110 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Asn | Glu | Pro | Asp | Phe | Val | His | Val | Trp | Phe | Gly | Leu | Ala | Lys | Leu | 115 | 120 | 125 |
| Gly | Cys | Val | Val | Ala | Phe | Leu | Asn | Thr | Asn | Ile | Arg | Ser | Asn | Ser | Leu | 130 | 135 | 140 |
| Leu | Asn | Cys | Ile | Arg | Ala | Cys | Gly | Pro | Arg | Ala | Leu | Val | Val | Gly | Ala | 145 | 150 | 155 |
| Asp | Leu | Leu | Gly | Thr | Val | Glu | Glu | Ile | Leu | Pro | Ser | Leu | Ser | Glu | Asn | 165 | 170 | 175 |
| Ile | Ser | Val | Trp | Gly | Met | Lys | Asp | Ser | Val | Pro | Gln | Gly | Val | Ile | Ser | 180 | 185 | 190 |
| Leu | Lys | Glu | Lys | Leu | Ser | Thr | Ser | Pro | Asp | Glu | Pro | Val | Pro | Arg | Ser | 195 | 200 | 205 |
| His | His | Val | Val | Ser | Leu | Leu | Lys | Ser | Thr | Cys | Leu | Tyr | Ile | Phe | Thr | 210 | 215 | 220 |
| Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Val | Ile | Ser | Gln | Leu | Gln | 225 | 230 | 235 |
| Val | Leu | Arg | Gly | Ser | Ala | Val | Leu | Trp | Ala | Phe | Gly | Cys | Thr | Ala | His | 245 | 250 | 255 |
| Asp | Ile | Val | Tyr | Ile | Thr | Leu | Pro | Leu | Tyr | His | Ser | Ser | Ala | Ala | Ile | 260 | 265 | 270 |
| Leu | Gly | Ile | Ser | Gly | Cys | Val | Glu | Leu | Gly | Ala | Thr | Cys | Val | Leu | Lys | 275 | 280 | 285 |
| Lys | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Ser | Asp | Cys | Lys | Lys | Tyr | Asp | 290 | 295 | 300 |
| Val | Thr | Val | Phe | Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | Leu | Cys | Lys | 305 | 310 | 315 |
| Gln | Ser | Lys | Arg | Glu | Gly | Glu | Lys | Asp | His | Lys | Val | Arg | Leu | Ala | Ile | 325 | 330 | 335 |
| Gly | Asn | Gly | Ile | Arg | Ser | Asp | Val | Trp | Arg | Glu | Phe | Leu | Asp | Arg | Phe | 340 | 345 | 350 |
| Gly | Asn | Ile | Lys | Val | Cys | Glu | Leu | Tyr | Ala | Ala | Thr | Glu | Ser | Ser | Ile | 355 | 360 | 365 |
| Ser | Phe | Met | Asn | Tyr | Thr | Gly | Arg | Ile | Gly | Ala | Ile | Gly | Arg | Thr | Asn | 370 | 375 | 380 |
| Leu | Phe | Tyr | Lys | Leu | Leu | Ser | Thr | Phe | Asp | Leu | Ile | Lys | Tyr | Asp | Phe | 385 | 390 | 395 |
| Gln | Lys | Asp | Glu | Pro | Met | Arg | Asn | Glu | Gln | Gly | Trp | Cys | Ile | His | Val | 405 | 410 | 415 |
| Lys | Lys | Gly | Glu | Pro | Gly | Leu | Leu | Ile | Ser | Arg | Val | Asn | Ala | Lys | Asn | 420 | 425 | 430 |
| Pro | Phe | Phe | Gly | Tyr | Ala | Gly | Pro | Tyr | Lys | His | Thr | Lys | Asp | Lys | Leu | 435 | 440 | 445 |
| Leu | Cys | Asp | Val | Phe | Lys | Lys | Gly | Asp | Val | Tyr | Leu | Asn | Thr | Gly | Asp | 450 | 455 | 460 |
| Leu | Ile | Val | Gln | Asp | Gln | Asp | Asn | Phe | Leu | Tyr | Phe | Trp | Asp | Arg | Thr | 465 | 470 | 475 |
| Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ala | Thr | Thr | Glu | Val | 485 | 490 | 495 |
| Ala | Asp | Val | Ile | Gly | Met | Leu | Asp | Phe | Ile | Gln | Glu | Ala | Asn | Val | Tyr | 500 | 505 | 510 |
| Gly | Val | Ala | Ile | Ser | Gly | Tyr | Glu | Gly | Arg | Ala | Gly | Met | Ala | Ser | Ile | 515 | 520 | 525 |
| Ile | Leu | Lys | Pro | Asn | Thr | Ser | Leu | Asp | Leu | Glu | Lys | Val | Tyr | Glu | Gln | 530 | 535 | 540 |
| Val | Val | Thr | Phe | Leu | Pro | Ala | Tyr | Ala | Cys | Pro | Arg | Phe | Leu | Arg | Ile | 545 | 550 | 555 |
| Gln | Glu | Lys | Met | Glu | Ala | Thr | Gly | Thr | Phe | Lys | Leu | Leu | Lys | His | Gln | 565 | 570 | 575 |

Leu Val Glu Asp Gly Phe Asn Pro Leu Lys Ile Ser Glu Pro Leu Tyr  
 580 585 590  
 Phe Met Asp Asn Leu Lys Lys Ser Tyr Val Leu Leu Thr Arg Glu Leu  
 595 600 605  
 Tyr Asp Gln Ile Met Leu Gly Glu Ile Lys Leu  
 610 615

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 <211> 3098  
 <212> DNA  
 <213> *Rattus norvegicus*

<400> 58  
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 caagccagag aaggatgcgg actccgggag caggaacagc ctctgtggcc tcattggggc 120  
 tgctttggct tctgggactt ccgtggacct ggagcgcggc ggcggcgttc ggtgtgtacg 180  
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 ttggcctctc tgttctgatc cgcgtgcggc tagagctacg acgacaccgg cgagcaggag 300  
 acacgatccc acgatcttc caggccgtgg ccagcgaca gccggagcgc ctggcgctgg 360  
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 cttcaagat ccagaagacc cgactacagc gtgaaggctt tgacccccgc cagacctcag 1920  
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|            |            |             |            |             |            |      |
|------------|------------|-------------|------------|-------------|------------|------|
| gatgtcctca | catcacagca | ggagacccag  | gaaggttgct | gtggtgtctc  | ttgggcaccc | 2820 |
| ctggcggcag | ccgtggacat | gcttcctctgc | tgtgatagcc | caaactgttg  | cctatgacat | 2880 |
| ttgaggtcta | cccttctggc | tgccatggtc  | cccattgaga | tctttggtga  | ctcacctcag | 2940 |
| ccaccaagcc | aggcctctgc | cttccttcag  | ctctaagggc | atgaaggggtg | tggacagagc | 3000 |
| agccacaggc | tgcccacagt | caccacatg   | caagtgttat | ttccttgttt  | gttttaaaaa | 3060 |
| aataaacatg | ctgagccttg | aaaaaaaaaa  | aaaaaaaaa  |             |            | 3098 |

&lt;210&gt; 59

&lt;211&gt; 646

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 59

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Thr | Pro | Gly | Ala | Gly | Thr | Ala | Ser | Val | Ala | Ser | Leu | Gly | Leu | 1   | 5   | 10  | 15  |
| Leu | Trp | Leu | Leu | Gly | Leu | Pro | Trp | Thr | Trp | Ser | Ala | Ala | Ala | Ala | Phe | 20  | 25  | 30  |     |
| Gly | Val | Tyr | Val | Gly | Ser | Gly | Gly | Trp | Arg | Phe | Leu | Arg | Ile | Val | Cys | 35  | 40  | 45  |     |
| Lys | Thr | Ala | Arg | Arg | Asp | Leu | Phe | Gly | Leu | Ser | Val | Leu | Ile | Arg | Val | 50  | 55  | 60  |     |
| Arg | Leu | Glu | Leu | Arg | Arg | His | Arg | Arg | Ala | Gly | Asp | Thr | Ile | Pro | Arg | 65  | 70  | 75  | 80  |
| Ile | Phe | Gln | Ala | Val | Ala | Gln | Arg | Gln | Pro | Glu | Arg | Leu | Ala | Leu | Val | 85  | 90  | 95  |     |
| Asp | Ala | Ser | Ser | Gly | Ile | Cys | Trp | Thr | Phe | Ala | Gln | Leu | Asp | Thr | Tyr | 100 | 105 | 110 |     |
| Ser | Asn | Ala | Val | Ala | Asn | Leu | Phe | Leu | Gln | Leu | Gly | Phe | Ala | Pro | Gly | 115 | 120 | 125 |     |
| Asp | Val | Val | Ala | Val | Phe | Leu | Glu | Gly | Arg | Pro | Glu | Phe | Val | Gly | Leu | 130 | 135 | 140 |     |
| Trp | Leu | Gly | Leu | Ala | Lys | Ala | Gly | Val | Val | Ala | Ala | Leu | Leu | Asn | Val | 145 | 150 | 155 | 160 |
| Asn | Leu | Arg | Arg | Glu | Pro | Leu | Ala | Phe | Cys | Leu | Gly | Thr | Ser | Ala | Ala | 165 | 170 | 175 |     |
| Lys | Ala | Leu | Ile | Tyr | Gly | Gly | Glu | Met | Ala | Ala | Ala | Val | Ala | Glu | Val | 180 | 185 | 190 |     |
| Ser | Glu | Gln | Leu | Gly | Lys | Ser | Leu | Leu | Lys | Phe | Cys | Ser | Gly | Asp | Leu | 195 | 200 | 205 |     |
| Gly | Pro | Glu | Ser | Val | Leu | Pro | Asp | Thr | Gln | Leu | Leu | Asp | Pro | Met | Leu | 210 | 215 | 220 |     |
| Ala | Glu | Ala | Pro | Thr | Thr | Pro | Leu | Ala | Gln | Ala | Pro | Gly | Lys | Gly | Met | 225 | 230 | 235 | 240 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | 245 | 250 | 255 |     |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Ile | Ala | Ala | Phe | 260 | 265 | 270 |     |
| Gly | His | His | Ser | Tyr | Ser | Met | Arg | Ala | Asn | Asp | Val | Leu | Tyr | Asp | Cys | 275 | 280 | 285 |     |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Met | Gly | Val | Gly | Gln | Cys | 290 | 295 | 300 |     |
| Ile | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser | 305 | 310 | 315 | 320 |
| Arg | Phe | Trp | Asp | Asp | Cys | Val | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr | 325 | 330 | 335 |     |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Arg | Gln | Pro | Val | Arg | Asp | Val | 340 | 345 | 350 |     |
| Glu | Arg | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro | 355 | 360 | 365 |     |

Ala Ile Trp Glu Glu Phe Thr Gln Gly Phe Gly Val Arg Gln Ile Gly  
 370 375 380  
 Glu Phe Tyr Gly Ala Thr Glu Cys Asn Cys Ser Ile Ala Asn Met Asp  
 385 390 395 400  
 Gly Lys Val Gly Ser Cys Gly Phe Asn Ser Arg Ile Leu Thr His Val  
 405 410 415  
 Tyr Pro Ile Arg Leu Val Lys Val Asn Glu Asp Thr Met Glu Pro Leu  
 420 425 430  
 Arg Asp Ser Gln Gly Leu Cys Ile Pro Cys Gln Pro Gly Glu Pro Gly  
 435 440 445  
 Leu Leu Val Gly Gln Ile Asn Gln Gln Asp Pro Leu Arg Arg Phe Asp  
 450 455 460  
 Gly Tyr Val Ser Asp Ser Ala Thr Asn Lys Lys Ile Ala His Ser Val  
 465 470 475 480  
 Phe Arg Lys Gly Asp Ser Ala Tyr Leu Ser Gly Asp Val Leu Val Met  
 485 490 495  
 Asp Glu Leu Gly Tyr Met Tyr Phe Arg Asp Arg Ser Gly Asp Thr Phe  
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 Arg Trp Arg Gly Glu Asn Val Ser Thr Thr Glu Val Glu Ala Val Leu  
 515 520 525  
 Ser Arg Leu Leu Gly Gln Thr Asp Val Ala Val Tyr Gly Val Ala Val  
 530 535 540  
 Pro Gly Val Glu Gly Lys Ser Gly Met Ala Ala Ile Ala Asp Pro His  
 545 550 555 560  
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 565 570 575  
 Ala Ser Tyr Ala Gln Pro Ile Phe Leu Arg Leu Leu Pro Gln Val Asp  
 580 585 590  
 Thr Thr Gly Thr Phe Lys Ile Gln Lys Thr Arg Leu Gln Arg Glu Gly  
 595 600 605  
 Phe Asp Pro Arg Gln Thr Ser Asp Arg Leu Phe Phe Leu Asp Leu Lys  
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 Ala Gly Asp Phe Ser Leu  
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| atgatcacct  | gggcctgcgg  | cagggggatt  | gcgtggccct  | cttcatgggc  | aatgagccgg  | 1140 |
| cctacgtgtg  | gctctggctg  | ggactgctca  | aactgggctg  | tcccatggcg  | tgctcaact   | 1200 |
| acaacatccg  | tgccaagtct  | ctgctacact  | gctttcagtg  | ctgcggggcg  | aaggtgctgc  | 1260 |
| tggcctcccc  | agagctacac  | gaagctgtcg  | aggaggttct  | tccaaccctg  | aaaaaggagg  | 1320 |
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| acaaagtaga  | cggggtgtcg  | gcggacccca  | tcccggagtc  | gtggagggtct | gaagtacagt  | 1440 |
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| ccattaatca  | ccatcgccctc | tggtatggga  | ccagccttgc  | cctgagggtcc | ggaattaagg  | 1560 |
| ctcatgacgt  | catctacacc  | accatgcccc  | tgtaccacag  | cgcggcgctc  | atgattggcc  | 1620 |
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| ttcgggtacct | ctgcaacacg  | ccccagaaac  | caaatgaccg  | ggaccacaaa  | gtgaaaatag  | 1800 |
| cactaggaaa  | tggcttacga  | ggagatgtgt  | ggagagagtt  | catcaagaga  | tttggggaca  | 1860 |
| ttcacattta  | tgagttctac  | gcttccactg  | aaggcaacat  | tggatttatg  | aactatccaa  | 1920 |
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| tgatcaagta  | tgacgtggag  | aaggatgagc  | ctgtccgtga  | tgcaaatgga  | tattgcatca  | 2040 |
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| aaggagacgt  | ctacttcaac  | agtggcgatc  | tctgatgat   | cgaccgtgaa  | aatttcatct  | 2220 |
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| aagtcgctga  | cattgtggga  | ctggtagatt  | ttgttgaaga  | agtgaatgtt  | tacggtgtgc  | 2340 |
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| cacctgccat  | ttgtccttgc  | aaacttagct  | tcttggagag  | agggccttat  | ttttttaaag  | 2940 |
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&lt;210&gt; 61

&lt;211&gt; 620

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 61

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Pro | Val | Leu | Tyr | Thr | Gly | Leu | Ala | Gly | Leu | Leu | Leu | Leu | Pro |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     |     | 15  |     |
| Leu | Leu | Leu | Thr | Cys | Cys | Cys | Pro | Tyr | Leu | Leu | Gln | Asp | Val | Arg | Phe |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Leu | Gln | Leu | Ala | Asn | Met | Ala | Arg | Gln | Val | Arg | Ser | Tyr | Arg | Gln |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Arg | Arg | Pro | Val | Arg | Thr | Ile | Leu | His | Val | Phe | Leu | Glu | Gln | Ala | Arg |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Thr | Pro | His | Lys | Pro | Phe | Leu | Leu | Phe | Arg | Asp | Glu | Thr | Leu | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Tyr | Ala | Gln | Val | Asp | Arg | Arg | Ser | Asn | Gln | Val | Ala | Arg | Ala | Leu | His |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | His | Leu | Gly | Leu | Arg | Gln | Gly | Asp | Cys | Val | Ala | Leu | Phe | Met | Gly |
|     |     | 100 |     |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Glu | Pro | Ala | Tyr | Val | Trp | Leu | Trp | Leu | Gly | Leu | Leu | Lys | Leu | Gly |
|     | 115 |     |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Cys | Pro | Met | Ala | Cys | Leu | Asn | Tyr | Asn | Ile | Arg | Ala | Lys | Ser | Leu | Leu |
|     | 130 |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| His | Cys | Phe | Gln | Cys | Cys | Gly | Ala | Lys | Val | Leu | Leu | Ala | Ser | Pro | Glu |  |
| 145 |     |     |     | 150 |     |     |     |     |     | 155 |     |     |     |     | 160 |  |
| Leu | His | Glu | Ala | Val | Glu | Glu | Val | Leu | Pro | Thr | Leu | Lys | Lys | Glu | Gly |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| Val | Ser | Val | Phe | Tyr | Val | Ser | Arg | Thr | Ser | Asn | Thr | Asn | Gly | Val | Asp |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Thr | Val | Leu | Asp | Lys | Val | Asp | Gly | Val | Ser | Ala | Asp | Pro | Ile | Pro | Glu |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Ser | Trp | Arg | Ser | Glu | Val | Thr | Phe | Thr | Thr | Pro | Ala | Val | Tyr | Ile | Tyr |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |
| Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Thr | Ile | Asn | His | His |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
| Arg | Leu | Trp | Tyr | Gly | Thr | Ser | Leu | Ala | Leu | Arg | Ser | Gly | Ile | Lys | Ala |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
| His | Asp | Val | Ile | Tyr | Thr | Thr | Met | Pro | Leu | Tyr | His | Ser | Ala | Ala | Leu |  |
|     |     | 260 |     |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
| Met | Ile | Gly | Leu | His | Gly | Cys | Ile | Val | Val | Gly | Ala | Thr | Phe | Ala | Leu |  |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
| Arg | Ser | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Asp | Asp | Cys | Arg | Lys | Tyr |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
| Asn | Ala | Thr | Val | Ile | Gln | Tyr | Ile | Gly | Glu | Leu | Leu | Arg | Tyr | Leu | Cys |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |
| Asn | Thr | Pro | Gln | Lys | Pro | Asn | Asp | Arg | Asp | His | Lys | Val | Lys | Ile | Ala |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |
| Leu | Gly | Asn | Gly | Leu | Arg | Gly | Asp | Val | Trp | Arg | Glu | Phe | Ile | Lys | Arg |  |
|     |     | 340 |     |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
| Phe | Gly | Asp | Ile | His | Ile | Tyr | Glu | Phe | Tyr | Ala | Ser | Thr | Glu | Gly | Asn |  |
|     | 355 |     |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |
| Ile | Gly | Phe | Met | Asn | Tyr | Pro | Arg | Lys | Ile | Gly | Ala | Val | Gly | Arg | Glu |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |
| Asn | Tyr | Leu | Gln | Lys | Lys | Val | Val | Arg | His | Glu | Leu | Ile | Lys | Tyr | Asp |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |
| Val | Glu | Lys | Asp | Glu | Pro | Val | Arg | Asp | Ala | Asn | Gly | Tyr | Cys | Ile | Lys |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |
| Val | Pro | Lys | Gly | Glu | Val | Gly | Leu | Leu | Ile | Cys | Lys | Ile | Thr | Glu | Leu |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |
| Thr | Pro | Phe | Phe | Gly | Tyr | Ala | Gly | Gly | Lys | Thr | Gln | Thr | Glu | Lys | Lys |  |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |
| Lys | Leu | Arg | Asp | Val | Phe | Lys | Lys | Gly | Asp | Val | Tyr | Phe | Asn | Ser | Gly |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |
| Asp | Leu | Leu | Met | Ile | Asp | Arg | Glu | Asn | Phe | Ile | Tyr | Phe | His | Asp | Arg |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |
| Val | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ala | Thr | Thr | Glu |  |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |
| Val | Ala | Asp | Ile | Val | Gly | Leu | Val | Asp | Phe | Val | Glu | Glu | Val | Asn | Val |  |
|     |     | 500 |     |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |
| Tyr | Gly | Val | Pro | Val | Pro | Gly | His | Glu | Gly | Arg | Ile | Gly | Met | Ala | Ser |  |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |
| Ile | Lys | Met | Lys | Glu | Asn | Tyr | Glu | Phe | Asn | Gly | Lys | Lys | Leu | Phe | Gln |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |
| His | Ile | Ser | Glu | Tyr | Leu | Pro | Ser | Tyr | Ser | Arg | Pro | Arg | Phe | Leu | Arg |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |
| Ile | Gln | Asp | Thr | Ile | Glu | Ile | Thr | Gly | Thr | Phe | Lys | His | Arg | Lys | Val |  |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |  |
| Thr | Leu | Met | Glu | Glu | Gly | Phe | Asn | Pro | Ser | Val | Ile | Lys | Asp | Thr | Leu |  |
|     |     | 580 |     |     |     |     |     | 585 |     |     |     |     | 590 |     |     |  |
| Tyr | Phe | Met | Asp | Asp | Thr | Glu | Lys | Thr | Tyr | Val | Pro | Met | Thr | Glu | Asp |  |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     |     | 605 |     |     |  |

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 Leu His Gly Met Thr Val Val Ile Arg Lys Lys Phe Ser Ala Ser Arg  
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 Phe Trp Asp Asp Cys Ile Lys Tyr Asn Cys Thr Ile Val Gln Tyr Ile  
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Gln Val Gly Ala Cys Gly Phe Asn Ser Arg Ile Leu Ser Phe Val Tyr  
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 Lys Lys Gly Asp Gln Ala Tyr Leu Thr Gly Asp Val Leu Val Met Asp  
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 Glu Leu Gly Tyr Leu Tyr Phe Arg Asp Arg Thr Gly Asp Thr Phe Arg  
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&lt;210&gt; 65

&lt;211&gt; 647

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 65

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Ala | Pro | Gly | Ala | Gly | Thr | Ala | Ser | Val | Ala | Ser | Leu | Ala | Leu |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     |     | 15  |     |
| Leu | Trp | Phe | Leu | Gly | Leu | Pro | Trp | Thr | Trp | Ser | Ala | Ala | Ala | Ala | Phe |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     |     | 30  |     |
| Cys | Val | Tyr | Val | Gly | Gly | Gly | Gly | Trp | Arg | Phe | Leu | Arg | Ile | Val | Cys |
|     |     |     | 35  |     |     |     |     | 40  |     |     |     |     |     | 45  |     |
| Lys | Thr | Ala | Arg | Arg | Asp | Leu | Phe | Gly | Leu | Ser | Val | Leu | Ile | Arg | Val |
|     |     |     | 50  |     |     |     |     | 55  |     |     |     |     |     | 60  |     |
| Arg | Leu | Glu | Leu | Arg | Arg | His | Arg | Arg | Ala | Gly | Asp | Thr | Ile | Pro | Cys |
| 65  |     |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |
| Ile | Phe | Gln | Ala | Val | Ala | Arg | Arg | Gln | Pro | Glu | Arg | Leu | Ala | Leu | Val |
|     |     |     |     |     |     | 85  |     |     |     |     |     |     |     | 95  |     |
| Asp | Ala | Ser | Ser | Gly | Ile | Cys | Trp | Thr | Phe | Ala | Gln | Leu | Asp | Thr | Tyr |
|     |     |     |     |     |     | 100 |     |     |     |     |     |     |     | 110 |     |
| Ser | Asn | Ala | Val | Ala | Asn | Leu | Phe | Arg | Gln | Leu | Gly | Phe | Ala | Pro | Gly |
|     |     |     |     |     |     | 115 |     |     |     |     |     |     |     | 125 |     |
|     |     |     |     |     |     |     |     | 120 |     |     |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Val | Val | Ala | Val | Phe | Leu | Glu | Gly | Arg | Pro | Glu | Phe | Val | Gly | Leu | 130 | 135 | 140 |
| Trp | Leu | Gly | Leu | Ala | Lys | Ala | Gly | Val | Val | Ala | Ala | Leu | Leu | Asn | Val | 145 | 150 | 155 |
| Asn | Leu | Arg | Arg | Glu | Pro | Leu | Ala | Phe | Cys | Leu | Gly | Thr | Ser | Ala | Ala | 165 | 170 | 175 |
| Lys | Ala | Leu | Ile | Tyr | Gly | Gly | Glu | Met | Ala | Ala | Ala | Val | Ala | Glu | Val | 180 | 185 | 190 |
| Ser | Glu | Gln | Leu | Gly | Lys | Ser | Leu | Leu | Lys | Phe | Cys | Ser | Gly | Asp | Leu | 195 | 200 | 205 |
| Gly | Pro | Glu | Ser | Ile | Leu | Pro | Asp | Thr | Gln | Leu | Leu | Asp | Pro | Met | Leu | 210 | 215 | 220 |
| Ala | Glu | Ala | Pro | Thr | Thr | Pro | Leu | Ala | Gln | Ala | Pro | Gly | Lys | Gly | Met | 225 | 230 | 235 |
| Asp | Asp | Arg | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | 245 | 250 | 255 |
| Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg | Ile | Ala | Ala | Phe | 260 | 265 | 270 |
| Gly | His | His | Ser | Tyr | Ser | Met | Arg | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys | 275 | 280 | 285 |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Met | Gly | Val | Gly | Gln | Cys | 290 | 295 | 300 |
| Val | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser | 305 | 310 | 315 |
| Arg | Phe | Trp | Asp | Asp | Cys | Val | Lys | Tyr | Asn | Cys | Thr | Val | Val | Asp | Asp | 325 | 330 | 335 |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Arg | Gln | Pro | Val | Arg | Asp | Val | 340 | 345 | 350 |
| Glu | Gln | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro | 355 | 360 | 365 |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Gln | Arg | Phe | Gly | Val | Pro | Gln | Ile | Gly | 370 | 375 | 380 |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp | 385 | 390 | 395 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Thr | His | Val | 405 | 410 | 415 |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Pro | Leu | 420 | 425 | 430 |
| Arg | Asp | Ser | Glu | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Glu | Pro | Gly | 435 | 440 | 445 |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp | 450 | 455 | 460 |
| Gly | Tyr | Val | Ser | Asp | Ser | Ala | Thr | Asn | Lys | Lys | Ile | Ala | His | Ser | Val | 465 | 470 | 475 |
| Phe | Arg | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met | 485 | 490 | 495 |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe | 500 | 505 | 510 |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Ala | Val | Leu | 515 | 520 | 525 |
| Ser | Arg | Leu | Leu | Gly | Gln | Thr | Asp | Val | Ala | Val | Tyr | Gly | Val | Ala | Val | 530 | 535 | 540 |
| Pro | Gly | Val | Glu | Gly | Lys | Ala | Gly | Met | Ala | Ala | Ile | Ala | Asp | Pro | His | 545 | 550 | 555 |
| Ser | Gln | Leu | Asp | Pro | Asn | Ser | Met | Tyr | Gln | Glu | Leu | Gln | Lys | Val | Leu | 565 | 570 | 575 |
| Ala | Ser | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Gln | Val | Asp | 580 | 585 | 590 |



Thr Thr Gly Thr Phe Lys Ile Gln Lys Thr Arg Leu Gln Arg Glu Gly  
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 Phe Asp Pro Arg Gln Thr Ser Asp Arg Leu Phe Phe Leu Asp Leu Lys  
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| Met | Leu | Pro | Val | Leu | Tyr | Thr | Gly | Leu | Ala | Gly | Leu | Leu | Leu | Leu | Pro | 1   | 5   | 10  | 15  |
| Leu | Leu | Leu | Thr | Cys | Cys | Cys | Pro | Tyr | Leu | Leu | Gln | Asp | Val | Arg | Tyr | 20  | 25  | 30  |     |
| Phe | Leu | Arg | Leu | Ala | Asn | Met | Ala | Arg | Arg | Val | Arg | Ser | Tyr | Arg | Gln | 35  | 40  | 45  |     |
| Arg | Arg | Pro | Val | Arg | Thr | Ile | Leu | Arg | Ala | Phe | Leu | Glu | Gln | Ala | Arg | 50  | 55  | 60  |     |
| Lys | Thr | Pro | His | Lys | Pro | Phe | Leu | Leu | Phe | Arg | Asp | Glu | Thr | Leu | Thr | 65  | 70  | 75  | 80  |
| Tyr | Ala | Gln | Val | Asp | Arg | Arg | Ser | Asn | Gln | Val | Ala | Arg | Ala | Leu | His | 85  | 90  | 95  |     |
| Asp | Gln | Leu | Gly | Leu | Arg | Gln | Gly | Asp | Cys | Val | Ala | Leu | Phe | Met | Gly | 100 | 105 | 110 |     |
| Asn | Glu | Pro | Ala | Tyr | Val | Trp | Ile | Trp | Leu | Gly | Leu | Leu | Lys | Leu | Gly | 115 | 120 | 125 |     |
| Cys | Pro | Met | Ala | Cys | Leu | Asn | Tyr | Asn | Ile | Arg | Ala | Lys | Ser | Leu | Leu | 130 | 135 | 140 |     |
| His | Cys | Phe | Gln | Cys | Cys | Gly | Ala | Lys | Val | Leu | Leu | Ala | Ser | Pro | Asp | 145 | 150 | 155 | 160 |
| Leu | Gln | Glu | Ala | Val | Glu | Glu | Val | Leu | Pro | Thr | Leu | Lys | Lys | Asp | Ala | 165 | 170 | 175 |     |
| Val | Ser | Val | Phe | Tyr | Val | Ser | Arg | Thr | Ser | Asn | Thr | Asn | Gly | Val | Asp | 180 | 185 | 190 |     |
| Thr | Ile | Leu | Asp | Lys | Val | Asp | Gly | Val | Ser | Ala | Glu | Pro | Thr | Pro | Glu | 195 | 200 | 205 |     |
| Ser | Trp | Arg | Ser | Glu | Val | Thr | Phe | Thr | Thr | Pro | Ala | Val | Tyr | Ile | Tyr | 210 | 215 | 220 |     |
| Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ser | Gly | Thr | Ile | Asn | His | His | 225 | 230 | 235 | 240 |
| Arg | Leu | Arg | Tyr | Gly | Thr | Ser | Leu | Ala | Met | Ser | Ser | Gly | Asn | His | Gly | 245 | 250 | 255 |     |
| Gln | Gly | Cys | His | Leu | Tyr | Gln | Gln | Cys | Pro | Cys | Ser | Asn | Ser | Ala | Thr | 260 | 265 | 270 |     |
| Leu | Lys | Ile | Gly | Leu | His | Gly | Cys | Ile | Leu | Gly | Trp | Gly | Tyr | Phe | Asn | 275 | 280 | 285 |     |
| Leu | Gly | Gly | Ala | Asn | Ser | Gln | Ala | Ser | Gln | Phe | Trp | Glu | Arg | Leu | Ala | 290 | 295 | 300 |     |
| Gly | Asn | Thr | Thr | Ser | Thr | Val | Ile | Gln | Tyr | Ile | Gly | Glu | Leu | Leu | Arg | 305 | 310 | 315 | 320 |
| Tyr | Leu | Cys | Asn | Thr | Pro | Gln | Lys | Pro | Asn | Asp | Arg | Asp | His | Lys | Val | 325 | 330 | 335 |     |
| Lys | Lys | Ala | Leu | Gly | Asn | Gly | Leu | Arg | Gly | Asp | Val | Trp | Arg | Glu | Phe | 340 | 345 | 350 |     |
| Ile | Lys | Arg | Phe | Gly | Asp | Ile | His | Val | Tyr | Glu | Phe | Tyr | Ala | Ser | Thr | 355 | 360 | 365 |     |
| Glu | Gly | Asn | Ile | Gly | Phe | Val | Asn | Tyr | Pro | Arg | Lys | Ile | Gly | Ala | Val | 370 | 375 | 380 |     |
| Gly | Arg | Ala | Asn | Tyr | Leu | Gln | Arg | Lys | Val | Ala | Arg | Tyr | Glu | Leu | Ile | 385 | 390 | 395 | 400 |
| Lys | Tyr | Asp | Val | Glu | Lys | Asp | Glu | Pro | Val | Arg | Asp | Ala | Asn | Gly | Tyr | 405 | 410 | 415 |     |
| Cys | Ile | Lys | Val | Pro | Lys | Gly | Glu | Val | Gly | Leu | Leu | Val | Cys | Lys | Ile | 420 | 425 | 430 |     |
| Thr | Gln | Leu | Thr | Pro | Phe | Ile | Gly | Tyr | Ala | Gly | Gly | Lys | Thr | Gln | Thr | 435 | 440 | 445 |     |
| Glu | Lys | Lys | Lys | Leu | Arg | Asp | Val | Phe | Lys | Lys | Gly | Asp | Ile | Tyr | Phe | 450 | 455 | 460 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Ser | Gly | Asp | Leu | Leu | Met | Ile | Asp | Arg | Glu | Asn | Phe | Val | Tyr | Phe |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| His | Asp | Arg | Val | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ala |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Thr | Thr | Glu | Val | Ala | Asp | Ile | Val | Gly | Leu | Val | Asp | Phe | Val | Glu | Glu |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Val | Asn | Val | Tyr | Gly | Val | Pro | Val | Pro | Gly | His | Glu | Gly | Arg | Ile | Gly |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Met | Ala | Ser | Leu | Lys | Ile | Lys | Glu | Asn | Tyr | Glu | Phe | Asn | Gly | Lys | Lys |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Leu | Phe | Gln | His | Ile | Ala | Glu | Tyr | Leu | Pro | Ser | Tyr | Ala | Arg | Pro | Arg |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Phe | Leu | Arg | Ile | Gln | Asp | Thr | Ile | Glu | Ile | Thr | Gly | Thr | Phe | Lys | His |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Arg | Lys | Val | Thr | Leu | Met | Glu | Glu | Gly | Phe | Asn | Pro | Thr | Val | Ile | Lys |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Asp | Thr | Leu | Tyr | Phe | Met | Asp | Asp | Ala | Glu | Lys | Thr | Phe | Val | Pro | Met |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Thr | Glu | Asn | Ile | Tyr | Asn | Ala | Ile | Ile | Asp | Lys | Thr | Leu | Lys | Leu |     |
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| gagagcaacc  | ggattgctcg  | cgcctttctg  | cgcgcacggg  | gctggaccgg  | gggccgcca  | 180  |
| ggctcgggca  | ggggcagcac  | tgaggaaggc  | gcacgcgtgg  | cgcctccggc  | tggagatgcg | 240  |
| gctgctagag  | ggacgacccg  | gccccctctg  | gcacccgggg  | cgaccgtggc  | gctgctcctc | 300  |
| ccagcggggc  | cggatttctt  | ttggatttgg  | ttcggactgg  | ccaagctctg  | cctgcgcacg | 360  |
| gcctttgtgc  | ccaccgcttt  | acgcgcagga  | cccctgtctg  | actgacctcg  | cagctgcggt | 420  |
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| cccaaggctg  | ctcgaatcag  | tcatctgaag  | gttctacagt  | gccagggatt  | ctaccatctg | 720  |
| tgtggagtcc  | accagagga   | cgtgatctac  | ctcgcactcc  | cactgtacca  | catgtctggc | 780  |
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| ttctcagcta  | gccagttctg  | ggacgattgc  | cagaaacaca  | gggtgcacagt | gttccagtac | 900  |
| attggggagt  | tgtgccgata  | cctcgtcaac  | cagccccga   | gcaaggcaga  | gtttgaccat | 960  |
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| caaggctttc  | ttcacttcca  | cgatcgtact  | ggagacacca  | tcaggtggaa  | gggagagaat | 1440 |
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1980

1998

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<400> 69

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| Glu | Ser | Ser | Glu | Ser | Gly | Cys | Ser | Leu | Ala | Trp | Arg | Leu | Ala | Tyr | Leu |
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| Ala | Arg | Glu | Gln | Pro | Thr | His | Thr | Phe | Leu | Ile | His | Gly | Ala | Gln | Arg |
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| 65  |     |     |     |     | 70  |     |     |     | 75  |     |     |     |     | 80  |     |
| Ala | Ala | Arg | Gly | Thr | Thr | Ala | Pro | Pro | Leu | Ala | Pro | Gly | Ala | Thr | Val |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ala | Leu | Leu | Leu | Pro | Ala | Gly | Pro | Asp | Phe | Leu | Trp | Ile | Trp | Phe | Gly |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Leu | Ala | Lys | Ala | Gly | Leu | Arg | Thr | Ala | Phe | Val | Pro | Thr | Ala | Leu | Arg |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Arg | Gly | Pro | Leu | Leu | His | Cys | Leu | Arg | Ser | Cys | Gly | Ala | Ser | Ala | Leu |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Val | Leu | Ala | Thr | Glu | Phe | Leu | Glu | Ser | Leu | Glu | Pro | Asp | Leu | Pro | Ala |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     | 160 |     |
| Leu | Arg | Ala | Met | Gly | Leu | His | Leu | Trp | Ala | Thr | Gly | Pro | Glu | Thr | Asn |
|     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |
| Val | Ala | Gly | Ile | Ser | Asn | Leu | Leu | Ser | Glu | Ala | Ala | Asp | Gln | Val | Asp |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Glu | Pro | Val | Pro | Gly | Tyr | Leu | Ser | Ala | Pro | Gln | Asn | Ile | Met | Asp | Thr |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Cys | Leu | Tyr | Ile | Phe | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Arg | Ile | Ser | His | Leu | Lys | Val | Leu | Gln | Cys | Gln | Gly | Phe | Tyr | His | Leu |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     | 240 |     |
| Cys | Gly | Val | His | Gln | Glu | Asp | Val | Ile | Tyr | Leu | Ala | Leu | Pro | Leu | Tyr |
|     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |     |
| His | Met | Ser | Gly | Ser | Leu | Leu | Gly | Ile | Val | Gly | Cys | Leu | Gly | Ile | Gly |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Ala | Thr | Val | Val | Leu | Lys | Pro | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Asp |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Asp | Cys | Gln | Lys | His | Arg | Val | Thr | Val | Phe | Gln | Tyr | Ile | Gly | Glu | Leu |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Cys | Arg | Tyr | Leu | Val | Asn | Gln | Pro | Pro | Ser | Lys | Ala | Glu | Phe | Asp | His |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     | 320 |     |
| Lys | Val | Arg | Leu | Ala | Val | Gly | Ser | Gly | Leu | Arg | Pro | Asp | Thr | Trp | Glu |
|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |     |
| Arg | Phe | Leu | Arg | Arg | Phe | Gly | Pro | Leu | Gln | Ile | Leu | Glu | Thr | Tyr | Gly |
|     |     | 340 |     |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Met | Thr | Glu | Gly | Asn | Val | Ala | Thr | Phe | Asn | Tyr | Thr | Gly | Arg | Gln | Gly |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ala | Val | Gly | Arg | Ala | Ser | Trp | Leu | Tyr | Lys | His | Ile | Phe | Pro | Phe | Ser |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
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| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     | 400 |     |

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Ser Val Ala Asn Phe Leu Gln Ala Arg Gly Leu Ala Ser Gly Asn Val
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Val Ala Leu Phe Met Glu Asn Arg Asn Glu Phe Val Gly Leu Trp Leu
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Ala Pro Lys His Leu Pro Ser His Pro Asp Lys Gly Phe Thr Asp Lys
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&lt;400&gt; 72

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|             |            |             |             |             |             |      |
|-------------|------------|-------------|-------------|-------------|-------------|------|
| tgggtatttg  | gaagaaacta | accttactgc  | tgttgctgct  | tctgctgggt  | ggcctggggc  | 120  |
| agcccccattg | gccagcagct | atggctctgg  | ccctgcgttg  | gttcctggga  | gaccccat    | 180  |
| gccttgctgct | gcttggttg  | gcattgctgg  | gcagaccctg  | gatcagctcc  | tggatgcccc  | 240  |
| actggctgag  | cctggtagga | gcagctctta  | ccttattcct  | attgcctcta  | cagccacccc  | 300  |
| cagggctacg  | ctgggtgcat | aaagatgtgg  | ctttcacctt  | caagatgctt  | ttctatggcc  | 360  |
| taaagttcag  | gcgacgcctt | aacaaacatc  | ctccagagac  | ctttgtggat  | gcttttagagc | 420  |
| ggcaagcact  | ggcatggcct | gaccgggtgg  | ccttggtgtg  | tactgggtct  | gagggctcct  | 480  |
| caatcacaaa  | tagccagctg | gatgccaggt  | cctgtcaggc  | agcatgggtc  | ctgaaagcaa  | 540  |
| agctgaagga  | tgccgtaatc | cagaacacaa  | gagatgctgc  | tgctatctta  | gttctcccgt  | 600  |
| ccaagaccat  | ttctgctttg | agtgtgtttc  | tggggttggc  | caagttgggc  | tgccctgtgg  | 660  |
| cctggatcaa  | tccacacagc | cgagggatgc  | ccttgctaca  | ctctgtacgg  | agctctgggg  | 720  |
| ccagtgtgct  | gattgtggat | ccagacctcc  | aggagaacct  | ggaagaagtc  | cttcccaagc  | 780  |
| tgctagctga  | gaacattcac | tgcttctacc  | ttggccacag  | ctcaccacc   | ccgggagtag  | 840  |
| aggctctggg  | agcttccctg | gatgctgcac  | cttctgacct  | agtacctgcc  | agccttcgag  | 900  |
| ctacgattaa  | gtggaaatct | cctgccatat  | tcactctttac | ttcagggacc  | actggactcc  | 960  |
| caaagccagc  | catcttatca | catgagcggg  | tcatacaagt  | gagcaacgtg  | ctgtccttct  | 1020 |
| gtggatgcag  | agctgatgat | gtggtctatg  | acgtcctacc  | tctgtaccat  | acgatagggc  | 1080 |
| ttgtccttg   | attccttggc | tgcttacaag  | ttggagccac  | ctgtgtcctg  | gcccccaagt  | 1140 |
| tctctgcctc  | ccgattctgg | gctgagtggc  | ggcagctagg  | cgtaacagtg  | atcttgtatg  | 1200 |
| tgggtgaaat  | cctgcggtac | ttgtgtaacg  | tccctgagca  | accagaagac  | aagatacata  | 1260 |
| cagtgcgctt  | ggccatggga | actggacttc  | gggcaaagt   | gtggaaaaac  | ttccagcaac  | 1320 |
| gctttggtcc  | cattcgatc  | tggaattct   | acggatccac  | agagggcaat  | gtgggcttaa  | 1380 |
| tgaactatgt  | gggccactgc | ggggctgtgg  | gaaggaccag  | ctgcctcctt  | cgaatgctga  | 1440 |
| ctccctttga  | gcttgtacag | ttcgacatag  | agacagcaga  | gcctctgagg  | gacaaacagg  | 1500 |
| gtttttgcat  | tcctgtggag | ccaggaaaagc | caggacttct  | tttgaccaag  | gttcgaaaga  | 1560 |
| accaaccctt  | cctgggctac | cgtgggtccc  | aggccgagtc  | caatcggaag  | cttgttgcca  | 1620 |
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| aaggcttctt  | ctactttcaa | gaccgccttg  | gtgacacctt  | ccgggtggaag | ggcgaaaacg  | 1740 |
| tatctactgg  | agaggtggag | tgtgttttgt  | ctagcctaga  | cttccctagag | gaagtcaatg  | 1800 |
| tctatggtgt  | gcctgtgcca | gggtgtgagg  | gtaagggttg  | catggctgct  | gtgaaactgg  | 1860 |
| ctcctgggaa  | gacttttgat | gggcagaagc  | tataccagca  | tgctccgctcc | tggctccctg  | 1920 |
| cctatgccac  | acctcatttc | atccgtatcc  | aggattccct  | ggagatcaca  | aacacctaca  | 1980 |
| agctggtaaa  | gtcacggctg | gtgcgtgagg  | gttttgatgt  | ggggatcatt  | gctgaccccc  | 2040 |
| tctacatact  | ggacaacaag | gcccagacct  | tccggagtct  | gatgccagat  | gtgtaccagg  | 2100 |
| ctgtgtgtga  | aggaacctgg | aatctctgac  | cacctagcca  | actggaaggc  | aatccaaaag  | 2160 |
| tgtagagatt  | gacactagtc | agcttcacaa  | agttgtccgg  | gttccagatg  | cccatggccc  | 2220 |
| agtagtactt  | agagaataaa | cttgaatgtg  | tatacaaaaa  | aaaaaaaaaa  | aaaaaaa     | 2277 |

&lt;210&gt; 73

&lt;211&gt; 689

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 73

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Ile | Trp | Lys | Lys | Leu | Thr | Leu | Leu | Leu | Leu | Leu | Leu | Leu |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |
| Val | Gly | Leu | Gly | Gln | Pro | Pro | Trp | Pro | Ala | Ala | Met | Ala | Leu | Ala |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |
| Arg | Trp | Phe | Leu | Gly | Asp | Pro | Thr | Cys | Leu | Val | Leu | Leu | Gly | Leu |
|     |     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |
| Leu | Leu | Gly | Arg | Pro | Trp | Ile | Ser | Ser | Trp | Met | Pro | His | Trp | Leu |
|     |     |     | 50  |     |     | 55  |     |     |     |     | 60  |     |     |     |
| Leu | Val | Gly | Ala | Ala | Leu | Thr | Leu | Phe | Leu | Leu | Pro | Leu | Gln | Pro |
|     |     |     | 65  |     |     | 70  |     |     | 75  |     |     |     | 80  |     |
| Pro | Gly | Leu | Arg | Trp | Leu | His | Lys | Asp | Val | Ala | Phe | Thr | Phe | Lys |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Leu | Phe | Tyr | Gly | Leu | Lys | Phe | Arg | Arg | Arg | Leu | Asn | Lys | His | Pro |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Glu | Thr | Phe | Val | Asp | Ala | Leu | Glu | Arg | Gln | Ala | Leu | Ala | Trp | Pro | Asp |  |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |  |
| Arg | Val | Ala | Leu | Val | Cys | Thr | Gly | Ser | Glu | Gly | Ser | Ser | Ile | Thr | Asn |  |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |  |
| Ser | Gln | Leu | Asp | Ala | Arg | Ser | Cys | Gln | Ala | Ala | Trp | Val | Leu | Lys | Ala |  |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |  |
| Lys | Leu | Lys | Asp | Ala | Val | Ile | Gln | Asn | Thr | Arg | Asp | Ala | Ala | Ala | Ile |  |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     |     | 175 |  |  |
| Leu | Val | Leu | Pro | Ser | Lys | Thr | Ile | Ser | Ala | Leu | Ser | Val | Phe | Leu | Gly |  |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |
| Leu | Ala | Lys | Leu | Gly | Cys | Pro | Val | Ala | Trp | Ile | Asn | Pro | His | Ser | Arg |  |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |
| Gly | Met | Pro | Leu | Leu | His | Ser | Val | Arg | Ser | Ser | Gly | Ala | Ser | Val | Leu |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |
| Ile | Val | Asp | Pro | Asp | Leu | Gln | Glu | Asn | Leu | Glu | Glu | Val | Leu | Pro | Lys |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |
| Leu | Leu | Ala | Glu | Asn | Ile | His | Cys | Phe | Tyr | Leu | Gly | His | Ser | Ser | Pro |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |     | 255 |  |  |
| Thr | Pro | Gly | Val | Glu | Ala | Leu | Gly | Ala | Ser | Leu | Asp | Ala | Ala | Pro | Ser |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |  |
| Asp | Pro | Val | Pro | Ala | Ser | Leu | Arg | Ala | Thr | Ile | Lys | Trp | Lys | Ser | Pro |  |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |  |
| Ala | Ile | Phe | Ile | Phe | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Pro | Ala |  |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |  |
| Ile | Leu | Ser | His | Glu | Arg | Val | Ile | Gln | Val | Ser | Asn | Val | Leu | Ser | Phe |  |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |  |
| Cys | Gly | Cys | Arg | Ala | Asp | Asp | Val | Val | Tyr | Asp | Val | Leu | Pro | Leu | Tyr |  |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |  |
| His | Thr | Ile | Gly | Leu | Val | Leu | Gly | Phe | Leu | Gly | Cys | Leu | Gln | Val | Gly |  |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |  |
| Ala | Thr | Cys | Val | Leu | Ala | Pro | Lys | Phe | Ser | Ala | Ser | Arg | Phe | Trp | Ala |  |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |  |
| Glu | Cys | Arg | Gln | His | Gly | Val | Thr | Val | Ile | Leu | Tyr | Val | Gly | Glu | Ile |  |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |  |
| Leu | Arg | Tyr | Leu | Cys | Asn | Val | Pro | Glu | Gln | Pro | Glu | Asp | Lys | Ile | His |  |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |  |
| Thr | Val | Arg | Leu | Ala | Met | Gly | Thr | Gly | Leu | Arg | Ala | Asn | Val | Trp | Lys |  |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |  |
| Asn | Phe | Gln | Gln | Arg | Phe | Gly | Pro | Ile | Arg | Ile | Trp | Glu | Phe | Tyr | Gly |  |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |  |
| Ser | Thr | Glu | Gly | Asn | Val | Gly | Leu | Met | Asn | Tyr | Val | Gly | His | Cys | Gly |  |  |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |  |
| Ala | Val | Gly | Arg | Thr | Ser | Cys | Ile | Leu | Arg | Met | Leu | Thr | Pro | Phe | Glu |  |  |
|     |     | 450 |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |  |
| Leu | Val | Gln | Phe | Asp | Ile | Glu | Thr | Ala | Glu | Pro | Leu | Arg | Asp | Lys | Gln |  |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |  |
| Gly | Phe | Cys | Ile | Pro | Val | Glu | Pro | Gly | Lys | Pro | Gly | Leu | Leu | Leu | Thr |  |  |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |  |
| Lys | Val | Arg | Lys | Asn | Gln | Pro | Phe | Leu | Gly | Tyr | Arg | Gly | Ser | Gln | Ala |  |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |  |
| Glu | Ser | Asn | Arg | Lys | Leu | Val | Ala | Asn | Val | Arg | Arg | Val | Gly | Asp | Leu |  |  |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |  |
| Tyr | Phe | Asn | Thr | Gly | Asp | Val | Leu | Thr | Leu | Asp | Gln | Glu | Gly | Phe | Phe |  |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |  |
| Tyr | Phe | Gln | Asp | Arg | Leu | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn |  |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |  |
| Val | Ser | Thr | Gly | Glu | Val | Glu | Cys | Val | Leu | Ser | Ser | Leu | Asp | Phe | Leu |  |  |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     |     | 575 |  |  |

Glu Glu Val Asn Val Tyr Gly Val Pro Val Pro Gly Cys Glu Gly Lys  
                   580                                  585                                  590  
 Val Gly Met Ala Ala Val Lys Leu Ala Pro Gly Lys Thr Phe Asp Gly  
                   595                                  600                                  605  
 Gln Lys Leu Tyr Gln His Val Arg Ser Trp Leu Pro Ala Tyr Ala Thr  
                   610                                  615                                  620  
 Pro His Phe Ile Arg Ile Gln Asp Ser Leu Glu Ile Thr Asn Thr Tyr  
                   625                                  630                                  635                                  640  
 Lys Leu Val Lys Ser Arg Leu Val Arg Glu Gly Phe Asp Val Gly Ile  
                                   645                                  650                                  655  
 Ile Ala Asp Pro Leu Tyr Ile Leu Asp Asn Lys Ala Gln Thr Phe Arg  
                                   660                                  665                                  670  
 Ser Leu Met Pro Asp Val Tyr Gln Ala Val Cys Glu Gly Thr Trp Asn  
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 Leu

&lt;210&gt; 74

&lt;211&gt; 2221

&lt;212&gt; DNA

<213> *Drosophila melanogaster*

&lt;400&gt; 74

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| gccgagtacg  | tggccacctg  | gctgggtctc  | tccaagatcg  | gtgtgatcac  | accgctgac   | 300  |
| aacacgaatc  | tgcgcggtcc  | ctccctgctg  | cacagcatca  | cgggtggccca | ttgctcggct  | 360  |
| ctcattttacg | gcgaggactt  | cctggaagct  | gtcaccgacg  | tggccaagga  | tctgccagcg  | 420  |
| aacctcacac  | tcttccagtt  | caacaacgag  | aacaacaaca  | gcgagacgga  | aaagaacata  | 480  |
| ccgcaggcca  | agaatctgaa  | cgcgctgctg  | accacggcca  | gctatgagaa  | gcctaacaag  | 540  |
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| ggtggcatta  | tgtgcatggg  | tcagtcgggtg | ctctttggct  | ccacgggtctc | cattcgcaag  | 780  |
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| tatatcggtg  | agatggctcg  | ctacattcta  | gctacgaaac  | cctcggaata  | cgaccagaaa  | 900  |
| caccgagtgc  | gtctggctct  | tggaaacgga  | ctgcgaccgc  | agatttgcc   | acagtttggtg | 960  |
| cagcgcttca  | acattgccaa  | ggttggcgag  | ttctacggcg  | ccaccgaggg  | taatgcgaac  | 1020 |
| atcatgaatc  | atgacaacac  | ggtgggcgcc  | atcggttttg  | tgtcgcgcac  | cctgccccag  | 1080 |
| atctacccaa  | tctcgatcat  | tcgcgccgat  | cggacaccgc  | gagagcccat  | tagagatagg  | 1140 |
| aatggcctat  | gccaactgtg  | cgctcccaac  | gagccaggcg  | tattcatcgg  | caagatcgtc  | 1200 |
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| attgttaagg  | atgtgttcaa  | gcatggcgat  | atggctttca  | tctccggaga  | tctgctgggt  | 1320 |
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| cacttccatt  | ctcgttgctg  | ttcgtttttg  | cctgtacata  | tgagaagctc  | tgatgttttt  | 2160 |

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2220  
2221

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<400> 75  
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His Pro Asp Lys Val Ala Val Val Ser Glu Thr Gln Arg Trp Thr Phe  
35 40 45  
Arg Gln Val Asn Glu His Ala Asn Lys Val Ala Asn Val Leu Gln Ala  
50 55 60  
Gln Gly Tyr Lys Lys Gly Asp Val Val Ala Leu Leu Leu Glu Asn Arg  
65 70 75 80  
Ala Glu Tyr Val Ala Thr Trp Leu Gly Leu Ser Lys Ile Gly Val Ile  
85 90 95  
Thr Pro Leu Ile Asn Thr Asn Leu Arg Gly Pro Ser Leu Leu His Ser  
100 105 110  
Ile Thr Val Ala His Cys Ser Ala Leu Ile Tyr Gly Glu Asp Phe Leu  
115 120 125  
Glu Ala Val Thr Asp Val Ala Lys Asp Leu Pro Ala Asn Leu Thr Leu  
130 135 140  
Phe Gln Phe Asn Asn Glu Asn Asn Asn Ser Glu Thr Glu Lys Asn Ile  
145 150 155 160  
Pro Gln Ala Lys Asn Leu Asn Ala Leu Leu Thr Thr Ala Ser Tyr Glu  
165 170 175  
Lys Pro Asn Lys Thr Gln Val Asn His His Asp Lys Leu Val Tyr Ile  
180 185 190  
Tyr Thr Ser Gly Thr Thr Gly Leu Pro Lys Ala Ala Val Ile Ser His  
195 200 205  
Ser Arg Tyr Leu Phe Ile Ala Ala Gly Ile His Tyr Thr Met Gly Phe  
210 215 220  
Gln Glu Glu Asp Ile Phe Tyr Thr Pro Leu Pro Leu Tyr His Thr Ala  
225 230 235 240  
Gly Gly Ile Met Cys Met Gly Gln Ser Val Leu Phe Gly Ser Thr Val  
245 250 255  
Ser Ile Arg Lys Lys Phe Ser Ala Ser Asn Tyr Phe Ala Asp Cys Ala  
260 265 270  
Lys Tyr Asn Ala Thr Ile Gly Gln Tyr Ile Gly Glu Met Ala Arg Tyr  
275 280 285  
Ile Leu Ala Thr Lys Pro Ser Glu Tyr Asp Gln Lys His Arg Val Arg  
290 295 300  
Leu Val Phe Gly Asn Gly Leu Arg Pro Gln Ile Trp Pro Gln Phe Val  
305 310 315 320  
Gln Arg Phe Asn Ile Ala Lys Val Gly Glu Phe Tyr Gly Ala Thr Glu  
325 330 335  
Gly Asn Ala Asn Ile Met Asn His Asp Asn Thr Val Gly Ala Ile Gly  
340 345 350  
Phe Val Ser Arg Ile Leu Pro Lys Ile Tyr Pro Ile Ser Ile Ile Arg  
355 360 365  
Ala Asp Pro Asp Thr Gly Glu Pro Ile Arg Asp Arg Asn Gly Leu Cys  
370 375 380  
Gln Leu Cys Ala Pro Asn Glu Pro Gly Val Phe Ile Gly Lys Ile Val  
385 390 395 400

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Gly | Asn | Pro | Ser | Arg | Glu | Phe | Leu | Gly | Tyr | Val | Asp | Glu | Lys | Ala |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Ser | Ala | Lys | Lys | Ile | Val | Lys | Asp | Val | Phe | Lys | His | Gly | Asp | Met | Ala |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Phe | Ile | Ser | Gly | Asp | Leu | Leu | Val | Ala | Asp | Glu | Lys | Gly | Tyr | Leu | Tyr |
|     |     |     | 435 |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Phe | Lys | Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Ser | Thr | Ser | Glu | Val | Glu | Ala | Gln | Val | Ser | Asn | Val | Ala | Gly | Tyr | Lys |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Asp | Thr | Val | Val | Tyr | Gly | Val | Thr | Ile | Pro | His | Thr | Glu | Gly | Arg | Ala |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Gly | Met | Ala | Ala | Ile | Tyr | Asp | Pro | Glu | Arg | Glu | Leu | Asp | Leu | Asp | Val |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Phe | Ala | Ala | Ser | Leu | Ala | Lys | Val | Leu | Pro | Ala | Tyr | Ala | Arg | Pro | Gln |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Ile | Ile | Arg | Leu | Leu | Thr | Lys | Val | Asp | Leu | Thr | Gly | Thr | Phe | Lys | Leu |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| Arg | Lys | Val | Asp | Leu | Gln | Lys | Glu | Gly | Tyr | Asp | Pro | Asn | Ala | Ile | Lys |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Asp | Ala | Leu | Tyr | Tyr | Gln | Thr | Ser | Lys | Gly | Arg | Tyr | Glu | Leu | Leu | Thr |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Pro | Gln | Val | Tyr | Asp | Gln | Val | Gln | Arg | Asn | Glu | Ile | Arg | Phe |     |     |
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<212> DNA
<213> Danio rerio
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| gatccacggc | tcacaactga | ccagatctac | ttcctaaact | ccagagcagg | gcgttacgag | 120 |
| cttgtcaacg | aggagctgta | caatgcattt | gaacaagggc | aggatttccc | ttt        | 173 |

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[illegible]

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| gatttcattt | atagaagtta | tcttacgttg | aatagggatt | taacaggatt | ggctctaatt | 180 |

|            |            |             |             |             |            |      |
|------------|------------|-------------|-------------|-------------|------------|------|
| attgaagtca | aaatcgacct | atgggtggagg | ttgcatcaga  | ataaaggaat  | ccatgaactg | 240  |
| tttttgata  | ttgtgaaaaa | gaatccaaat  | aagccggcga  | tgattgacat  | cgagacgaat | 300  |
| acaacagaaa | catacgcaga | gttcaatgca  | cattgtaata  | gatatgccaa  | ttatttccag | 360  |
| ggtcttggct | atcgatccgg | agacgttgct  | gccttgta    | tgagaaactc  | ggtcgagttt | 420  |
| gtggccgcgt | ggatgggact | cgcaaaaatc  | ggagttgtaa  | cggcttggat  | caactcgaat | 480  |
| ttgaaaagag | agcaacttgt | tcattgtatc  | actgcgagca  | agacaaaaggc | gattatcaca | 540  |
| agtgtaacac | ttcagaatat | tatgcttgat  | gctatcgatc  | agaagctggt  | tgatgttgag | 600  |
| ggaattgagg | tttactctgt | cggagagccc  | aagaagaatt  | ctggattcaa  | gaatctcaag | 660  |
| aagaagttgg | atgctcaaat | tactacggaa  | ccaaagaccc  | ttgacatagt  | agattttaaa | 720  |
| agtattcttt | gcttcatcta | tacaagtggg  | actactggaa  | tgccaaaagc  | cgctgtcatg | 780  |
| aagcacttca | gatattactc | gattgccgtt  | ggagccgcaa  | aatcattcgg  | aatccgccct | 840  |
| tctgatcgta | tgtactgtct | gatgccaat   | tatcacactg  | cagctggaat  | tcttgagatt | 900  |
| gggcaagctc | tggtgggtgg | atcatcgtgt  | gtcattagaa  | aaaaattctc  | ggctagcaac | 960  |
| ttttggaggg | attgtgtaaa | gtatgattgt  | acagtttcac  | aatacattgg  | agagatttgt | 1020 |
| cgggtactgt | tggtcagcc  | agttgtggaa  | gaggaatcca  | ggcatagaat  | gagattgttg | 1080 |
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| attggagaac | tttatggttc | aactgaagga  | acttcatctc  | tcgtgaacat  | tgacggacat | 1200 |
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| ttaattaagg | ttgatgatgt | cactggagaa  | ccaatccgaa  | cttccgatgg  | actttgcatt | 1320 |
| gcatgtaatc | caggagagtc | tgaggaatg   | gtgtcgacga  | tcagaaaaaa  | taatccatta | 1380 |
| ttgcaattcg | agggatatct | gaataagaag  | gaaacgaata  | aaaagattat  | cagagatgtc | 1440 |
| ttcgcaaagg | gagatagttg | ctttttgact  | ggagatcttc  | ttcattggga  | tcgtcttggt | 1500 |
| tatgtatatt | tcaaggatcg | tactggagat  | actttccgtt  | ggaagggaga  | gaatgtgtcg | 1560 |
| actactgaag | tcgaggcaat | tcttcatcca  | attactggat  | tgtctgatgc  | aactgtttat | 1620 |
| ggtgtagagg | ttcctcaaag | agaggggaaga | ggttggaatgg | cgtcagttgt  | tcgagttgta | 1680 |
| tcgcatgagg | aagatgaaac | tcaatttggt  | catagagttg  | gagcaagact  | tgctcttcg  | 1740 |
| cttaccagct | acgcgattcc | tcagtttatg  | cgaatttgct  | aggatgttga  | gaaaacaggt | 1800 |
| acattcaaac | ttgtgaagac | gaatctacaa  | cgattaggta  | tcattggatgc | tccttcagat | 1860 |
| tcaatttaca | tctacaattc | tgaaaatcgc  | aattttgtgc  | cgttcgacaa  | tgatttgagg | 1920 |
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&lt;210&gt; 79

&lt;211&gt; 650

&lt;212&gt; PRT

<213> *Caenorhabditis elegans*

&lt;400&gt; 79

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Lys | Leu | Glu | Glu | Leu | Val | Thr | Val | Met | Leu | Leu | Thr | Val | Ala | Val |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ile | Ala | Gln | Asn | Leu | Pro | Ile | Gly | Val | Ile | Leu | Ala | Gly | Val | Leu | Ile |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Leu | Tyr | Ile | Thr | Val | Val | His | Gly | Asp | Phe | Ile | Tyr | Arg | Ser | Tyr | Leu |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Thr | Leu | Asn | Arg | Asp | Leu | Thr | Gly | Leu | Ala | Leu | Ile | Ile | Glu | Val | Lys |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ile | Asp | Leu | Trp | Trp | Arg | Leu | His | Gln | Asn | Lys | Gly | Ile | His | Glu | Leu |
| 65  |     |     |     |     | 70  |     |     |     | 75  |     |     |     |     | 80  |     |
| Phe | Leu | Asp | Ile | Val | Lys | Lys | Asn | Pro | Asn | Lys | Pro | Ala | Met | Ile | Asp |
|     |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ile | Glu | Thr | Asn | Thr | Thr | Glu | Thr | Tyr | Ala | Glu | Phe | Asn | Ala | His | Cys |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Arg | Tyr | Ala | Asn | Tyr | Phe | Gln | Gly | Leu | Gly | Tyr | Arg | Ser | Gly | Asp |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Val | Val | Ala | Leu | Tyr | Met | Glu | Asn | Ser | Val | Glu | Phe | Val | Ala | Ala | Trp |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Met | Gly | Leu | Ala | Lys | Ile | Gly | Val | Val | Thr | Ala | Trp | Ile | Asn | Ser | Asn |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     | 160 |     |
| Leu | Lys | Arg | Glu | Gln | Leu | Val | His | Cys | Ile | Thr | Ala | Ser | Lys | Thr | Lys |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ile | Ile | Thr | Ser | Val | Thr | Leu | Gln | Asn | Ile | Met | Leu | Asp | Ala | Ile |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Asp | Gln | Lys | Leu | Phe | Asp | Val | Glu | Gly | Ile | Glu | Val | Tyr | Ser | Val | Gly |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Glu | Pro | Lys | Lys | Asn | Ser | Gly | Phe | Lys | Asn | Leu | Lys | Lys | Lys | Leu | Asp |
|     |     | 210 |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ala | Gln | Ile | Thr | Thr | Glu | Pro | Lys | Thr | Leu | Asp | Ile | Val | Asp | Phe | Lys |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Ser | Ile | Leu | Cys | Phe | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Met | Pro | Lys |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Ala | Ala | Val | Met | Lys | His | Phe | Arg | Tyr | Tyr | Ser | Ile | Ala | Val | Gly | Ala |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Ala | Lys | Ser | Phe | Gly | Ile | Arg | Pro | Ser | Asp | Arg | Met | Tyr | Val | Ser | Met |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Pro | Ile | Tyr | His | Thr | Ala | Ala | Gly | Ile | Leu | Gly | Val | Gly | Gln | Ala | Leu |
|     |     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Leu | Gly | Gly | Ser | Ser | Cys | Val | Ile | Arg | Lys | Lys | Phe | Ser | Ala | Ser | Asn |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Phe | Trp | Arg | Asp | Cys | Val | Lys | Tyr | Asp | Cys | Thr | Val | Ser | Gln | Tyr | Ile |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Ala | Gln | Pro | Val | Val | Glu | Glu | Glu |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Ser | Arg | His | Arg | Met | Arg | Leu | Leu | Val | Gly | Asn | Gly | Leu | Arg | Ala | Glu |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ile | Trp | Gln | Pro | Phe | Val | Asp | Arg | Phe | Arg | Val | Arg | Ile | Gly | Glu | Leu |
|     |     | 370 |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Tyr | Gly | Ser | Thr | Glu | Gly | Thr | Ser | Ser | Leu | Val | Asn | Ile | Asp | Gly | His |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Val | Gly | Ala | Cys | Gly | Phe | Leu | Pro | Ile | Ser | Pro | Leu | Thr | Lys | Lys | Met |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| His | Pro | Val | Arg | Leu | Ile | Lys | Val | Asp | Asp | Val | Thr | Gly | Glu | Ala | Ile |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Arg | Thr | Ser | Asp | Gly | Leu | Cys | Ile | Ala | Cys | Asn | Pro | Gly | Glu | Ser | Gly |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Ala | Met | Val | Ser | Thr | Ile | Arg | Lys | Asn | Asn | Pro | Leu | Leu | Gln | Phe | Glu |
|     |     | 450 |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Gly | Tyr | Leu | Asn | Lys | Lys | Glu | Thr | Asn | Lys | Lys | Ile | Ile | Arg | Asp | Val |
| 465 |     |     |     | 470 |     |     |     |     |     | 475 |     |     |     |     | 480 |
| Phe | Ala | Lys | Gly | Asp | Ser | Cys | Phe | Leu | Thr | Gly | Asp | Leu | Leu | His | Trp |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Asp | Arg | Leu | Gly | Tyr | Val | Tyr | Phe | Lys | Asp | Arg | Thr | Gly | Asp | Thr | Phe |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Arg | Trp | Lys | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Ala | Ile | Leu |
|     |     | 515 |     |     |     | 520 |     |     |     |     |     | 525 |     |     |     |
| His | Pro | Ile | Thr | Gly |     |     |     |     |     |     |     |     |     |     |     |

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<212> DNA  
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Arg Arg Ala Leu Ala Thr Leu Pro Arg Asp Phe Ala Gly Leu Lys Leu  
50 55 60  
Leu Ile Ser Val Lys Ser Thr Ile Arg Gly Leu Phe Lys Lys Asp Arg  
65 70 75 80

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Ile | His | Glu | Ile | Phe | Leu | Asn | Gln | Val | Lys | Gln | His | Pro | Asn | Lys |
| Val | Ala | Ile | Ile | Glu | Ile | Glu | Ser | Gly | Arg | Gln | Leu | Thr | Tyr | Gln | Glu |
| Leu | Asn | Ala | Leu | Ala | Asn | Gln | Tyr | Ala | Asn | Leu | Tyr | Val | Ser | Glu | Gly |
| Tyr | Lys | Met | Gly | Asp | Val | Val | Ala | Leu | Phe | Met | Glu | Asn | Ser | Ile | Asp |
| Phe | Phe | Ala | Ile | Trp | Leu | Gly | Leu | Ser | Lys | Ile | Gly | Val | Val | Ser | Ala |
| 145 |     |     |     | 150 |     |     |     |     |     | 155 |     |     |     |     | 160 |
| Phe | Ile | Asn | Ser | Asn | Leu | Lys | Leu | Glu | Pro | Leu | Ala | His | Ser | Ile | Asn |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Val | Ser | Lys | Cys | Lys | Ser | Cys | Ile | Thr | Asn | Ile | Asn | Leu | Leu | Pro | Met |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     | 190 |     |     |     |
| Phe | Lys | Ala | Ala | Arg | Glu | Lys | Asn | Leu | Ile | Ser | Asp | Glu | Ile | His | Val |
|     |     |     | 195 |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Phe | Leu | Ala | Gly | Thr | Gln | Val | Asp | Gly | Arg | His | Arg | Ser | Leu | Gln | Gln |
|     |     |     | 210 |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Asp | Leu | His | Leu | Phe | Ser | Glu | Asp | Glu | Pro | Pro | Val | Ile | Asp | Gly | Leu |
| 225 |     |     |     | 230 |     |     |     |     |     | 235 |     |     |     | 240 |     |
| Asn | Phe | Arg | Ser | Val | Leu | Cys | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asn | Pro | Lys | Pro | Ala | Val | Ile | Lys | His | Phe | Arg | Tyr | Phe | Trp | Ile | Ala |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Met | Gly | Ala | Gly | Lys | Ala | Phe | Gly | Ile | Asn | Lys | Ser | Asp | Val | Val | Tyr |
|     |     |     | 275 |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Ile | Thr | Met | Pro | Met | Tyr | His | Ser | Ala | Ala | Gly | Ile | Met | Gly | Ile | Gly |
|     |     |     | 290 |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Ser | Leu | Ile | Ala | Phe | Gly | Ser | Thr | Ala | Val | Ile | Arg | Lys | Lys | Phe | Ser |
| 305 |     |     |     | 310 |     |     |     |     |     | 315 |     |     |     | 320 |     |
| Ala | Ser | Asn | Phe | Trp | Lys | Asp | Cys | Val | Lys | Tyr | Asn | Val | Thr | Ala | Thr |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Gln | Tyr | Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Ala | Ala | Asn | Pro | Cys |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Pro | Glu | Glu | Lys | Gln | His | Asn | Val | Arg | Leu | Met | Trp | Gly | Asn | Gly | Leu |
|     |     |     | 355 |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Arg | Gly | Gln | Ile | Trp | Lys | Glu | Phe | Val | Gly | Arg | Phe | Gly | Ile | Lys | Lys |
|     |     |     | 370 |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Ile | Gly | Glu | Leu | Tyr | Gly | Ser | Thr | Glu | Gly | Asn | Ser | Asn | Ile | Val | Asn |
| 385 |     |     |     | 390 |     |     |     |     |     | 395 |     |     |     | 400 |     |
| Val | Asp | Asn | His | Val | Gly | Ala | Cys | Gly | Phe | Met | Pro | Ile | Tyr | Pro | His |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Ile | Gly | Ser | Leu | Tyr | Pro | Val | Arg | Leu | Ile | Lys | Val | Asp | Arg | Ala | Thr |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     | 430 |     |     |     |
| Gly | Glu | Leu | Glu | Arg | Asp | Lys | Asn | Gly | Leu | Cys | Val | Pro | Cys | Val | Pro |
|     |     |     | 435 |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Gly | Glu | Thr | Gly | Glu | Met | Val | Gly | Val | Ile | Lys | Glu | Lys | Asp | Ile | Leu |
|     |     |     | 450 |     |     | 455 |     |     |     |     | 460 |     |     |     |     |



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | Thr | Val | Gly | Lys | Met | Glu | Gly | Arg | Ala | Gly | Met | Ala | Gly | Ile |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Val | Val | Lys | Asp | Gly | Thr | Asp | Val | Glu | Lys | Phe | Ile | Ala | Asp | Ile | Thr |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Ser | Arg | Leu | Thr | Glu | Asn | Leu | Ala | Ser | Tyr | Ala | Ile | Pro | Val | Phe | Ile |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     | 590 |     |     |     |
| Arg | Leu | Cys | Lys | Glu | Val | Asp | Arg | Thr | Gly | Thr | Phe | Lys | Leu | Lys | Lys |
|     |     | 595 |     |     |     |     | 600 |     |     |     | 605 |     |     |     |     |
| Thr | Asp | Leu | Gln | Lys | Gln | Gly | Tyr | Asp | Leu | Val | Ala | Cys | Lys | Gly | Asp |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Pro | Ile | Tyr | Tyr | Trp | Ser | Ala | Ala | Glu | Lys | Ser | Tyr | Lys | Pro | Leu | Thr |
|     | 625 |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Asp | Lys | Met | Gln | Gln | Asp | Ile | Asp | Thr | Gly | Val | Tyr | Asp | Arg | Ile |     |
|     |     |     | 645 |     |     |     |     |     | 650 |     |     |     |     | 655 |     |

&lt;210&gt; 82

&lt;211&gt; 1932

&lt;212&gt; DNA

&lt;213&gt; Cochliobolu heterostrophus

&lt;400&gt; 82

|             |             |             |             |             |             |      |
|-------------|-------------|-------------|-------------|-------------|-------------|------|
| atggcggtgta | tgcatacaggc | tcagctataac | aatgatctag  | aggaattgct  | aactgggtcca | 60   |
| tcagtaccca  | tcgttgctgg  | agctgctgga  | gctgcagctc  | tcactgccta  | cattaacgcc  | 120  |
| aaataccaca  | tagcccatga  | tctcaagacc  | ctcgggtggtg | gattgacaca  | atcgctccgaa | 180  |
| gcgattgatt  | tcataaaccg  | ccgcgtcgca  | caaaagcgcg  | tcctcacgca  | ccacatcttc  | 240  |
| caggagcagg  | tccaaaaaca  | atcaaatacat | ccctttctta  | tctttgaggg  | caagacatgg  | 300  |
| tcttacaagg  | agttctctga  | ggcatacacg  | agggtcgcg   | actggctgat  | tgatgagctg  | 360  |
| gacgtacaag  | taggggagat  | ggtcgcaatt  | gatggcgga   | atagtgcaga  | gcacctgatg  | 420  |
| ctttggcttg  | cacttgatgc  | aatcggtgcg  | gctacgagtt  | ttttgaactg  | gaacctgaca  | 480  |
| ggggcgagggt | taattcattg  | cataaagcta  | tgcgaatgtc  | gattcggttat | cgcagacatc  | 540  |
| gatattaaag  | cgaacattga  | accgtgccgt  | ggcgaactgg  | aggagacggg  | catcaacatt  | 600  |
| cactactatg  | acccatcctt  | catctcatcg  | ctaccgaata  | acacgccaat  | tcccgacagc  | 660  |
| cgacttgaga  | acattgaatt  | agattcagta  | cgaggactga  | tatacacatc  | tggaaccact  | 720  |
| ggtctaccta  | aaggcggtgt  | tataagcact  | ggccgcgagc  | ttaggactga  | ctggctcgatt | 780  |
| tcaaagtatc  | taaatctcaa  | gcccacggat  | cgaatgtata  | catgtatgcc  | gctctaccat  | 840  |
| gccgctgcac  | acagcctctg  | tacagcatca  | gtttatcatg  | gtggaggtac  | cgtgggtattg | 900  |
| agcaggaaat  | tctcacacaa  | gaagttcttg  | cctgaagtgt  | tggcttcgga  | agcaaataatc | 960  |
| attcagtagc  | ttggtgaatt  | aggctgatat  | ctcctgaatg  | gtccaaagag  | tccttacgac  | 1020 |
| agggcccata  | aagtccagat  | ggcgtggggc  | aatggcatgc  | gtccagacgt  | gtgggaagcg  | 1080 |
| tttcgtgaac  | gcttcaacat  | accaattatt  | catgagctct  | atgccgcaac  | cgatgggctc  | 1140 |
| gggtcaatga  | ccaatcgtaa  | cgcgggcoct  | tttacagcaa  | actgtattgc  | gctgcgaggg  | 1200 |
| ctgatctggc  | actggaaatt  | tcgaaatcag  | gaagtgctgg  | tcaagatgga  | tctcgatact  | 1260 |
| gatgagatca  | tgagagatcg  | caatgggttt  | gcgatacgat  | gcgctgtcaa  | tgaacctgga  | 1320 |
| cagatgcttt  | ttcggctgac  | acccgaaact  | ctggctgggtg | caccaagcta  | ctacaacaac  | 1380 |
| gaaacggcca  | cacagagcag  | gcggattaca  | gatgtgtttc  | aaaagggtga  | cctgtggttc  | 1440 |
| aagtccggtg  | acatgctacg  | gcaagacgcc  | gaaggccgcg  | tctactttgt  | cgatcgacta  | 1500 |
| ggcgatacgt  | tccgctggaa  | atccgaaaac  | gtttctacca  | atgaagtcgc  | ggacgtgatg  | 1560 |
| ggcacatttc  | ctcagattgc  | tgaacgaat   | gtatacggtg  | tccttggtgcc | gggtaacgat  | 1620 |
| ggtcgagtgc  | gcagcctcaa  | ttgtcatggc  | agacggcggtg | acagagtcga  | cattcgcttc  | 1680 |
| gctgcccttg  | caaagcacgc  | ccgagatcgg  | ttaccgggtt  | atgctgtacc  | actgtttctg  | 1740 |
| agggtaactc  | cagcacttga  | atatacgggc  | acattaaaga  | ttcagaaagg  | acgcctcaag  | 1800 |
| caggaaggta  | tagaccacaga | taagatttcc  | ggcgaagata  | agttatactg  | gctgccgcct  | 1860 |
| ggtagcgata  | tatatattacc | atttggaag   | atggagtggc  | aggggaattgt | agataagcgt  | 1920 |
| atacggctgt  | ga          |             |             |             |             | 1932 |

&lt;210&gt; 83

&lt;211&gt; 643

&lt;212&gt; PRT

&lt;213&gt; Cochliobolu heterostrophus

<400> 83

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Cys | Met | His | Gln | Ala | Gln | Leu | Tyr | Asn | Asp | Leu | Glu | Glu | Leu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |     |
| Leu | Thr | Gly | Pro | Ser | Val | Pro | Ile | Val | Ala | Gly | Ala | Ala | Gly | Ala | Ala |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Ala | Leu | Thr | Ala | Tyr | Ile | Asn | Ala | Lys | Tyr | His | Ile | Ala | His | Asp | Leu |
|     |     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Lys | Thr | Leu | Gly | Gly | Gly | Leu | Thr | Gln | Ser | Ser | Glu | Ala | Ile | Asp | Phe |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ile | Asn | Arg | Arg | Val | Ala | Gln | Lys | Arg | Val | Leu | Thr | His | His | Ile | Phe |
| 65  |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |     |
| Gln | Glu | Gln | Val | Gln | Lys | Gln | Ser | Asn | His | Pro | Phe | Leu | Ile | Phe | Glu |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |     | 95  |     |
| Gly | Lys | Thr | Trp | Ser | Tyr | Lys | Glu | Phe | Ser | Glu | Ala | Tyr | Thr | Arg | Val |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ala | Asn | Trp | Leu | Ile | Asp | Glu | Leu | Asp | Val | Gln | Val | Gly | Glu | Met | Val |
|     |     |     | 115 |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Ala | Ile | Asp | Gly | Gly | Asn | Ser | Ala | Glu | His | Leu | Met | Leu | Trp | Leu | Ala |
|     |     |     | 130 |     |     |     | 135 |     |     |     | 140 |     |     |     |     |
| Leu | Asp | Ala | Ile | Gly | Ala | Ala | Thr | Ser | Phe | Leu | Asn | Trp | Asn | Leu | Thr |
| 145 |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |     |
| Gly | Ala | Gly | Leu | Ile | His | Cys | Ile | Lys | Leu | Cys | Glu | Cys | Arg | Phe | Val |
|     |     |     | 165 |     |     |     |     | 170 |     |     |     |     |     | 175 |     |
| Ile | Ala | Asp | Ile | Asp | Ile | Lys | Ala | Asn | Ile | Glu | Pro | Cys | Arg | Gly | Glu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Leu | Glu | Glu | Thr | Gly | Ile | Asn | Ile | His | Tyr | Tyr | Asp | Pro | Ser | Phe | Ile |
|     |     |     | 195 |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ser | Ser | Leu | Pro | Asn | Asn | Thr | Pro | Ile | Pro | Asp | Ser | Arg | Thr | Glu | Asn |
|     |     |     | 210 |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ile | Glu | Leu | Asp | Ser | Val | Arg | Gly | Leu | Ile | Tyr | Thr | Ser | Gly | Thr | Thr |
| 225 |     |     |     | 230 |     |     |     |     |     | 235 |     |     |     | 240 |     |
| Gly | Leu | Pro | Lys | Gly | Val | Phe | Ile | Ser | Thr | Gly | Arg | Glu | Leu | Arg | Thr |
|     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |     | 255 |     |
| Asp | Trp | Ser | Ile | Ser | Lys | Tyr | Leu | Asn | Leu | Lys | Pro | Thr | Asp | Arg | Met |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Tyr | Thr | Cys | Met | Pro | Leu | Tyr | His | Ala | Ala | Ala | His | Ser | Leu | Cys | Thr |
|     |     |     | 275 |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Ala | Ser | Val | Ile | His | Gly | Gly | Gly | Thr | Val | Val | Leu | Ser | Arg | Lys | Phe |
|     |     |     | 290 |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Ser | His | Lys | Lys | Phe | Trp | Pro | Glu | Val | Val | Ala | Ser | Glu | Ala | Asn | Ile |
| 305 |     |     |     | 310 |     |     |     |     |     | 315 |     |     |     | 320 |     |
| Ile | Gln | Tyr | Val | Gly | Glu | Leu | Gly | Arg | Tyr | Leu | Leu | Asn | Gly | Pro | Lys |
|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     |     | 335 |     |
| Ser | Pro | Tyr | Asp | Arg | Ala | His | Lys | Val | Gln | Met | Ala | Trp | Gly | Asn | Gly |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Met | Arg | Pro | Asp | Val | Trp | Glu | Ala | Phe | Arg | Glu | Arg | Phe | Asn | Ile | Pro |
|     |     |     | 355 |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ile | Ile | His | Glu | Leu | Tyr | Ala | Ala | Thr | Asp | Gly | Leu | Gly | Ser | Met | Thr |
|     |     |     | 370 |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Asn | Arg | Asn | Ala | Gly | Pro | Phe | Thr | Ala | Asn | Cys | Ile | Ala | Leu | Arg | Gly |
| 385 |     |     |     | 390 |     |     |     |     |     | 395 |     |     |     | 400 |     |
| Leu | Ile | Trp | His | Trp | Lys | Phe | Arg | Asn | Gln | Glu | Val | Leu | Val | Lys | Met |
|     |     |     | 405 |     |     |     |     | 410 |     |     |     |     |     | 415 |     |
| Asp | Leu | Asp | Thr | Asp | Glu | Ile | Met | Arg | Asp | Arg | Asn | Gly | Phe | Ala | Ile |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Arg | Cys | Ala | Val | Asn | Glu | Pro | Gly | Gln | Met | Leu | Phe | Arg | Leu | Thr | Pro |
|     |     |     | 435 |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Glu | Thr | Leu | Ala | Gly | Ala | Pro | Ser | Tyr | Tyr | Asn | Asn | Glu | Thr | Ala | Thr |
|     |     |     | 450 |     |     | 455 |     |     |     |     | 460 |     |     |     |     |

Gln Ser Arg Arg Ile Thr Asp Val Phe Gln Lys Gly Asp Leu Trp Phe  
 465 470 475 480  
 Lys Ser Gly Asp Met Leu Arg Gln Asp Ala Glu Gly Arg Val Tyr Phe  
 485 490 495  
 Val Asp Arg Leu Gly Asp Thr Phe Arg Trp Lys Ser Glu Asn Val Ser  
 500 505 510  
 Thr Asn Glu Val Ala Asp Val Met Gly Thr Phe Pro Gln Ile Ala Glu  
 515 520 525  
 Thr Asn Val Tyr Gly Val Leu Val Pro Gly Asn Asp Gly Arg Val Arg  
 530 535 540  
 Ser Leu Asn Cys His Gly Arg Arg Arg Asp Arg Val Asp Ile Arg Phe  
 545 550 555 560  
 Ala Ala Leu Ala Lys His Ala Arg Asp Arg Leu Pro Gly Tyr Ala Val  
 565 570 575  
 Pro Leu Phe Leu Arg Val Thr Pro Ala Leu Glu Tyr Thr Gly Thr Leu  
 580 585 590  
 Lys Ile Gln Lys Gly Arg Leu Lys Gln Glu Gly Ile Asp Pro Asp Lys  
 595 600 605  
 Ile Ser Gly Glu Asp Lys Leu Tyr Trp Leu Pro Pro Gly Ser Asp Ile  
 610 615 620  
 Tyr Leu Pro Phe Gly Lys Met Glu Trp Gln Gly Ile Val Asp Lys Arg  
 625 630 635 640  
 Ile Arg Leu

<210> 84  
 <211> 597  
 <212> DNA  
 <213> *Aspergillus nidulans*

<400> 84  
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 atcatcggcc gcaagttctc cgcgagaaac ttcataaagg aagcgcgcga gaacgacgcc 120  
 acggtcatcc agtacgtggg tgagaccttg cgatatctgc tcgccacccc cggtgaaacc 180  
 gatccagtta ctggcgaaga cctggacaaa aagcacaata ttcgagcagt atacggcaac 240  
 gggctacggc cggatatctg gaaccgcttc aaggagcgct tcaacgtgcc gacgggtgcc 300  
 gaattttatg ctgcaaccga gagcccaggc ggaacatgga actattcaac aaatgacttc 360  
 actgccggag ccattgggca cactggcggtg cttagtggat ggcttcttgg acgcggcctt 420  
 actattgtcg aggtggacca ggaatcacag gaaccatggc gcgatcccca aaccgggttc 480  
 tgcaagccgg tcccgcgagg cgaagcaggc gagctcctgt atgccattga tccggccgac 540  
 ccgggcgaga ccttccaggg ctactaccgc aactccttta gagcacactg gcggccg 597

<210> 85  
 <211> 199  
 <212> PRT  
 <213> *Aspergillus nidulans*

<400> 85  
 Leu Tyr His Ser Ser Ala Ser Phe Cys Ile Phe Ser Leu Thr Ala Ala  
 1 5 10 15  
 Gly Ser Thr Leu Ile Ile Gly Arg Lys Phe Ser Ala Arg Asn Phe Ile  
 20 25 30  
 Lys Glu Ala Arg Glu Asn Asp Ala Thr Val Ile Gln Tyr Val Gly Glu  
 35 40 45  
 Thr Leu Arg Tyr Leu Leu Ala Thr Pro Gly Glu Thr Asp Pro Val Thr  
 50 55 60  
 Gly Glu Asp Leu Asp Lys Lys His Asn Ile Arg Ala Val Tyr Gly Asn  
 65 70 75 80

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gly        | Leu        | Arg        | Pro        | Asp<br>85  | Ile        | Trp        | Asn        | Arg        | Phe<br>90  | Lys        | Glu        | Arg        | Phe        | Asn<br>95  | Val        |
| Pro        | Thr        | Val        | Ala<br>100 | Glu        | Phe        | Tyr        | Ala        | Ala<br>105 | Thr        | Glu        | Ser        | Pro        | Gly<br>110 | Gly        | Thr        |
| Trp        | Asn        | Tyr<br>115 | Ser        | Thr        | Asn        | Asp        | Phe<br>120 | Thr        | Ala        | Gly        | Ala        | Ile<br>125 | Gly        | His        | Thr        |
| Gly        | Val<br>130 | Leu        | Ser        | Gly        | Trp        | Leu<br>135 | Leu        | Gly        | Arg        | Gly        | Leu<br>140 | Thr        | Ile        | Val        | Glu        |
| Val<br>145 | Asp        | Gln        | Glu        | Ser        | Gln<br>150 | Glu        | Pro        | Trp        | Arg        | Asp<br>155 | Pro        | Gln        | Thr        | Gly        | Phe<br>160 |
| Cys        | Lys        | Pro        | Val        | Pro<br>165 | Arg        | Gly        | Glu        | Ala        | Gly<br>170 | Glu        | Leu        | Leu        | Tyr        | Ala<br>175 | Ile        |
| Asp        | Pro        | Ala        | Asp<br>180 | Pro        | Gly        | Glu        | Thr        | Phe<br>185 | Gln        | Gly        | Tyr        | Tyr        | Arg        | Asn<br>190 | Ser        |
| Phe        | Arg        | Ala<br>195 | His        | Trp        | Arg        | Pro        |            |            |            |            |            |            |            |            |            |

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<210> 86
<211> 522
<212> DNA
<213> Magnaporthe grisea
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<220>  
<221> misc_feature  
<222> (1) ... (522)  
<223> n = A,T,C or G
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| <400> 86   |             |            |            |             |            |     |
|------------|-------------|------------|------------|-------------|------------|-----|
| gcaaaggccg | acgcgtggct  | gcggacgggt | aacgtgatca | gggcggaaca  | cgaagggcga | 60  |
| ctcttcttcc | acgaccggat  | cggagacacg | ttccgatgga | agggagagac  | ngtcagcaca | 120 |
| caagaggtca | gtttgggtgct | cggacgacac | gactcaatca | aggaggccaa  | cgtgtacggc | 180 |
| gtgacggtgc | cgaaccacga  | cgggcgggcc | ggctgcgctg | cgctcacgct  | atcagacgct | 240 |
| ctggcgactg | aaaagaagct  | gggcgatgag | ctgctaaagg | gattggctac  | tcactcgtcg | 300 |
| acttcgcttc | ccaagtttgc  | ggtgccgcag | ttcctacggg | tggtgcgcgg  | cgagatgcag | 360 |
| tcaacgggca | ccaacaagca  | acagaagcac | gacctgaggg | tgcaggggtgt | agagccgggc | 420 |
| aaggtagggc | tagacgaggt  | gtactggttg | cggggaggga | catatgtacc  | attcggaaca | 480 |
| gaggattggg | atggggttaa  | gaagggtctt | gtgaagttgt | ga          |            | 522 |

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<210> 87
<211> 173
<212> PRT
<213> Magnaporthe grisea
```

|                                                   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <div> <div>&lt;400&gt;</div> <div>87</div> </div> |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala                                               | Lys | Ala | Asp | Ala | Trp | Leu | Arg | Thr | Gly | Asn | Val | Ile | Arg | Ala | Asp |
| 1                                                 |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Asn                                               | Glu | Gly | Arg | Leu | Phe | Phe | His | Asp | Arg | Ile | Gly | Asp | Thr | Phe | Arg |
|                                                   |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Trp                                               | Lys | Gly | Glu | Thr | Val | Ser | Thr | Gln | Glu | Val | Ser | Leu | Val | Leu | Gly |
|                                                   |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Arg                                               | His | Asp | Ser | Ile | Lys | Glu | Ala | Asn | Val | Tyr | Gly | Val | Thr | Val | Pro |
|                                                   | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Asn                                               | His | Asp | Gly | Arg | Ala | Gly | Cys | Ala | Ala | Leu | Thr | Leu | Ser | Asp | Ala |
| 65                                                |     |     |     | 70  |     |     |     |     |     | 75  |     |     |     | 80  |     |
| Leu                                               | Ala | Thr | Glu | Lys | Lys | Leu | Gly | Asp | Glu | Leu | Leu | Lys | Gly | Leu | Ala |
|                                                   |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Thr                                               | His | Ser | Ser | Thr | Ser | Leu | Pro | Lys | Phe | Ala | Val | Pro | Gln | Phe | Leu |
|                                                   |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

Arg Val Val Arg Gly Glu Met Gln Ser Thr Gly Thr Asn Lys Gln Gln  
 115 120 125  
 Lys His Asp Leu Arg Val Gln Gly Val Glu Pro Gly Lys Val Gly Val  
 130 135 140  
 Asp Glu Val Tyr Trp Leu Arg Gly Gly Thr Tyr Val Pro Phe Gly Thr  
 145 150 155 160  
 Glu Asp Trp Asp Gly Leu Lys Lys Gly Leu Val Lys Leu  
 165 170

<210> 88  
 <211> 1872  
 <212> DNA  
 <213> *Saccharomyces cerevisiae*

<400> 88  
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 ataaaatttt ga 1872

<210> 89  
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 <212> PRT  
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 Leu Leu Phe Arg Leu Ile Lys Leu Ile Ile Thr Pro Ile Gln Lys Ser  
 20 25 30

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gly | Tyr | Leu | Phe | Gly | Asn | Tyr | Phe | Asp | Glu | Leu | Asp | Arg | Lys | Tyr | 35  | 40  | 45  |
| Arg | Tyr | Lys | Glu | Asp | Trp | Tyr | Ile | Ile | Pro | Tyr | Phe | Leu | Lys | Ser | Val | 50  | 55  | 60  |
| Phe | Cys | Tyr | Ile | Ile | Asp | Val | Arg | Arg | His | Arg | Phe | Gln | Asn | Trp | Tyr | 65  | 70  | 75  |
| Leu | Phe | Ile | Lys | Gln | Val | Gln | Gln | Asn | Gly | Asp | His | Leu | Ala | Ile | Ser | 85  | 90  | 95  |
| Tyr | Thr | Arg | Pro | Met | Ala | Glu | Lys | Gly | Glu | Phe | Gln | Leu | Glu | Thr | Phe | 100 | 105 | 110 |
| Thr | Tyr | Ile | Glu | Thr | Tyr | Asn | Ile | Val | Leu | Arg | Leu | Ser | His | Ile | Leu | 115 | 120 | 125 |
| His | Phe | Asp | Tyr | Asn | Val | Gln | Ala | Gly | Asp | Tyr | Val | Ala | Ile | Asp | Cys | 130 | 135 | 140 |
| Thr | Asn | Lys | Pro | Leu | Phe | Val | Phe | Leu | Trp | Leu | Ser | Leu | Trp | Asn | Ile | 145 | 150 | 155 |
| Gly | Ala | Ile | Pro | Ala | Phe | Leu | Asn | Tyr | Asn | Thr | Lys | Gly | Thr | Pro | Leu | 165 | 170 | 175 |
| Val | His | Ser | Leu | Lys | Ile | Ser | Asn | Ile | Thr | Gln | Val | Phe | Ile | Asp | Pro | 180 | 185 | 190 |
| Asp | Ala | Ser | Asn | Pro | Ile | Arg | Glu | Ser | Glu | Glu | Glu | Ile | Lys | Asn | Ala | 195 | 200 | 205 |
| Leu | Pro | Asp | Val | Lys | Leu | Asn | Tyr | Leu | Glu | Glu | Gln | Asp | Leu | Met | His | 210 | 215 | 220 |
| Glu | Leu | Leu | Asn | Ser | Gln | Ser | Pro | Glu | Phe | Leu | Gln | Gln | Asp | Asn | Val | 225 | 230 | 235 |
| Arg | Thr | Pro | Leu | Gly | Leu | Thr | Asp | Phe | Lys | Pro | Ser | Met | Leu | Ile | Tyr | 245 | 250 | 255 |
| Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ser | Ala | Ile | Met | Ser | Trp | Arg | 260 | 265 | 270 |
| Lys | Ser | Ser | Val | Gly | Cys | Gln | Val | Phe | Gly | His | Val | Leu | His | Met | Thr | 275 | 280 | 285 |
| Asn | Glu | Ser | Thr | Val | Phe | Thr | Ala | Met | Pro | Leu | Phe | His | Ser | Thr | Ala | 290 | 295 | 300 |
| Ala | Leu | Leu | Gly | Ala | Cys | Ala | Ile | Leu | Ser | His | Gly | Gly | Cys | Leu | Ala | 305 | 310 | 315 |
| Leu | Ser | His | Lys | Phe | Ser | Ala | Ser | Thr | Phe | Trp | Lys | Gln | Val | Tyr | Leu | 325 | 330 | 335 |
| Thr | Gly | Ala | Thr | His | Ile | Gln | Tyr | Val | Gly | Glu | Val | Cys | Arg | Tyr | Leu | 340 | 345 | 350 |
| Leu | His | Thr | Pro | Ile | Ser | Lys | Tyr | Glu | Lys | Met | His | Lys | Val | Lys | Val | 355 | 360 | 365 |
| Ala | Tyr | Gly | Asn | Gly | Leu | Arg | Pro | Asp | Ile | Trp | Gln | Asp | Phe | Arg | Lys | 370 | 375 | 380 |
| Arg | Phe | Asn | Ile | Glu | Val | Ile | Gly | Glu | Phe | Tyr | Ala | Ala | Thr | Glu | Ala | 385 | 390 | 395 |
| Pro | Phe | Ala | Thr | Thr | Phe | Gln | Lys | Gly | Asp | Phe | Gly | Ile | Gly | Ala |     | 405 | 410 | 415 |
| Cys | Arg | Asn | Tyr | Gly | Thr | Ile | Ile | Gln | Trp | Phe | Leu | Ser | Phe | Gln | Gln | 420 | 425 | 430 |
| Thr | Leu | Val | Arg | Met | Asp | Pro | Asn | Asp | Asp | Ser | Val | Ile | Tyr | Arg | Asn | 435 | 440 | 445 |
| Ser | Lys | Gly | Phe | Cys | Glu | Val | Ala | Pro | Val | Gly | Glu | Pro | Gly | Glu | Met | 450 | 455 | 460 |
| Leu | Met | Arg | Ile | Phe | Phe | Pro | Lys | Lys | Pro | Glu | Thr | Ser | Phe | Gln | Gly | 465 | 470 | 475 |
| Tyr | Leu | Gly | Asn | Ala | Lys | Glu | Thr | Lys | Ser | Lys | Val | Val | Arg | Asp | Val | 485 | 490 | 495 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Arg | Arg | Gly | Asp | Ala | Trp | Tyr | Arg | Cys | Gly | Asp | Leu | Leu | Lys | Ala |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Asp | Glu | Tyr | Gly | Leu | Trp | Tyr | Phe | Leu | Asp | Arg | Met | Gly | Asp | Thr | Phe |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Arg | Trp | Lys | Ser | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Asp | Gln | Leu |
|     |     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |
| Thr | Ala | Ser | Asn | Lys | Glu | Gln | Tyr | Ala | Gln | Val | Leu | Val | Val | Gly | Ile |
|     |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Lys | Val | Pro | Lys | Tyr | Glu | Gly | Arg | Ala | Gly | Phe | Ala | Val | Ile | Lys | Leu |
|     |     |     |     |     | 565 |     |     |     | 570 |     |     |     |     |     | 575 |
| Thr | Asp | Asn | Ser | Leu | Asp | Ile | Thr | Ala | Lys | Thr | Lys | Leu | Leu | Asn | Asp |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Ser | Leu | Ser | Arg | Leu | Asn | Leu | Pro | Ser | Tyr | Ala | Met | Pro | Leu | Phe | Val |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Lys | Phe | Val | Asp | Glu | Ile | Lys | Met | Thr | Asp | Asn | Leu | Ile | Lys | Phe |     |
|     |     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |

&lt;210&gt; 90

&lt;211&gt; 1794

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 90

|            |            |            |            |             |             |      |
|------------|------------|------------|------------|-------------|-------------|------|
| gtgtccgatt | actacggcgg | cgcacacaca | acggtcaggc | tgatcgacct  | ggcaactcgg  | 60   |
| atgccgcgag | tgttggcgga | cacgccggtg | attgtgcgtg | gggcaatgac  | cgggctgctg  | 120  |
| gcccggccga | attccaaggc | gtcgatcggc | acgggtgttc | aggaccgggc  | cgctcgctac  | 180  |
| ggtgaccgag | tcttcctgaa | attcggcgat | cagcagctga | cctaccgcga  | cgctaaccgc  | 240  |
| accgccaacc | ggtagccgcg | ggtggtggcc | gcccgcggcg | tcggccccgg  | cgacgtcggt  | 300  |
| ggcatcatgt | tgcgtaactc | accagcaca  | gtcttggcga | tgctggccac  | ggtcaagtgc  | 360  |
| ggcgtatctg | ccggcatgct | caactaccac | cagcgcggcg | aggtgttggc  | gcacagcctg  | 420  |
| ggtctgctgg | acgcgaaggt | actgatcgca | gagtcgact  | tggtcagcgc  | cgtcgcccga  | 480  |
| tgcggcgcc  | cgcgcgccg  | ggtagcgggc | gacgtgctga | ccgtcgagga  | cgtggagcga  | 540  |
| ttcgccacaa | cggcgcggcg | caccaaccgc | gcgtcgggcg | cggcgggtgca | agccaaagac  | 600  |
| accgcgttct | acatcttcac | ctcgggcacc | accgatttc  | ccaaggccag  | tgtcatgacg  | 660  |
| catcatcggt | ggctgcgggc | gctggccgtc | tccggaggga | tggggctgcg  | gctgaagggt  | 720  |
| tccgacacgc | tctacagctg | cctgccgctg | taccacaaca | acgcgttaac  | ggtcgcgggtg | 780  |
| tcgtcggtga | tcaattctgg | ggcgaccctg | gcgtgggta  | agtcgttttc  | ggcgtcgcg   | 840  |
| ttctgggatg | aggtgattgc | caaccgggcg | acggcggttc | tctacatcgg  | cgaaatctgc  | 900  |
| cgttatctgc | tcaaccagcc | ggccaagccg | accgaccgtg | cccaccaggt  | gcgggtgatc  | 960  |
| tgcggtaacg | ggctgcggcc | ggagatctgg | gatgagttca | ccacccgctt  | cggggtcgcg  | 1020 |
| cgggtgtgcg | agttctacgc | cgccagcgaa | ggcaactcgg | cctttatcaa  | catcttcaac  | 1080 |
| gtgcccagga | ccgccggggg | atcgccgatg | ccgcttgcc  | ttgtggaata  | cgacctggac  | 1140 |
| accggcgatc | cgctgcggga | tgcgagcggg | cgagtgcgtc | gggtaccgga  | cgtgaaccc   | 1200 |
| ggcctgttgc | ttagccgggt | caaccggctg | cagccgttcg | acggctacac  | cgaccgggtt  | 1260 |
| gccagcgaaa | agaagtgtgt | gcgcaacgct | tttcgagatg | gcgactgttg  | gttcaacacc  | 1320 |
| ggtgacgtga | tgagcccgca | gggcatgggc | catgccgct  | tcgtcgatcg  | gctgggcgac  | 1380 |
| accttcgct  | ggaagggcga | gaatgtcgcc | accactcagg | tcgaagcggc  | actggcctcc  | 1440 |
| gaccagaccg | tcgaggagt  | cacggtctac | ggcgccaga  | ttccgcgcac  | cggcgggcgc  | 1500 |
| gccggaatgg | ccgcgatcac | actgcgcgct | ggcgccgaat | tcgacggcca  | ggcgctggcc  | 1560 |
| cgaacggttt | acggtcactt | gcccggctat | gcacttcgcg | tctttgttcg  | ggtagtgggg  | 1620 |
| tcgctggcgc | acaccacgac | gttcaagagt | cgcaaggtgc | agttgcgcaa  | ccaggcctat  | 1680 |
| ggcgccgaca | tcgaggatcc | gctgtacgta | ctggccggcc | cggacgaagg  | atatgtgccg  | 1740 |
| tactacgccg | aataccctga | ggaggtttcg | ctcggaaggc | gaccgcaggg  | ctag        | 1794 |

&lt;210&gt; 91

&lt;211&gt; 597

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis

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 Arg Gly Ala Met Thr Gly Leu Leu Ala Arg Pro Asn Ser Lys Ala Ser  
 35 40 45  
 Ile Gly Thr Val Phe Gln Asp Arg Ala Ala Arg Tyr Gly Asp Arg Val  
 50 55 60  
 Phe Leu Lys Phe Gly Asp Gln Gln Leu Thr Tyr Arg Asp Ala Asn Ala  
 65 70 75 80  
 Thr Ala Asn Arg Tyr Ala Ala Val Leu Ala Ala Arg Gly Val Gly Pro  
 85 90 95  
 Gly Asp Val Val Gly Ile Met Leu Arg Asn Ser Pro Ser Thr Val Leu  
 100 105 110  
 Ala Met Leu Ala Thr Val Lys Cys Gly Ala Ile Ala Gly Met Leu Asn  
 115 120 125  
 Tyr His Gln Arg Gly Glu Val Leu Ala His Ser Leu Gly Leu Leu Asp  
 130 135 140  
 Ala Lys Val Leu Ile Ala Glu Ser Asp Leu Val Ser Ala Val Ala Glu  
 145 150 155 160  
 Cys Gly Ala Ser Arg Gly Arg Val Ala Gly Asp Val Leu Thr Val Glu  
 165 170 175  
 Asp Val Glu Arg Phe Ala Thr Thr Ala Pro Ala Thr Asn Pro Ala Ser  
 180 185 190  
 Ala Ser Ala Val Gln Ala Lys Asp Thr Ala Phe Tyr Ile Phe Thr Ser  
 195 200 205  
 Gly Thr Thr Gly Phe Pro Lys Ala Ser Val Met Thr His His Arg Trp  
 210 215 220  
 Leu Arg Ala Leu Ala Val Phe Gly Gly Met Gly Leu Arg Leu Lys Gly  
 225 230 235 240  
 Ser Asp Thr Leu Tyr Ser Cys Leu Pro Leu Tyr His Asn Asn Ala Leu  
 245 250 255  
 Thr Val Ala Val Ser Ser Val Ile Asn Ser Gly Ala Thr Leu Ala Leu  
 260 265 270  
 Gly Lys Ser Phe Ser Ala Ser Arg Phe Trp Asp Glu Val Ile Ala Asn  
 275 280 285  
 Arg Ala Thr Ala Phe Val Tyr Ile Gly Glu Ile Cys Arg Tyr Leu Leu  
 290 295 300  
 Asn Gln Pro Ala Lys Pro Thr Asp Arg Ala His Gln Val Arg Val Ile  
 305 310 315 320  
 Cys Gly Asn Gly Leu Arg Pro Glu Ile Trp Asp Glu Phe Thr Thr Arg  
 325 330 335  
 Phe Gly Val Ala Arg Val Cys Glu Phe Tyr Ala Ala Ser Glu Gly Asn  
 340 345 350  
 Ser Ala Phe Ile Asn Ile Phe Asn Val Pro Arg Thr Ala Gly Val Ser  
 355 360 365  
 Pro Met Pro Leu Ala Phe Val Glu Tyr Asp Leu Asp Thr Gly Asp Pro  
 370 375 380  
 Leu Arg Asp Ala Ser Gly Arg Val Arg Arg Val Pro Asp Gly Glu Pro  
 385 390 395 400  
 Gly Leu Leu Leu Ser Arg Val Asn Arg Leu Gln Pro Phe Asp Gly Tyr  
 405 410 415  
 Thr Asp Pro Val Ala Ser Glu Lys Lys Leu Val Arg Asn Ala Phe Arg  
 420 425 430  
 Asp Gly Asp Cys Trp Phe Asn Thr Gly Asp Val Met Ser Pro Gln Gly  
 435 440 445  
 Met Gly His Ala Ala Phe Val Asp Arg Leu Gly Asp Thr Phe Arg Trp  
 450 455 460



Lys Gly Glu Asn Val Ala Thr Thr Gln Val Glu Ala Ala Leu Ala Ser  
 465 470 475 480  
 Asp Gln Thr Val Glu Glu Cys Thr Val Tyr Gly Val Gln Ile Pro Arg  
 485 490 495  
 Thr Gly Gly Arg Ala Gly Met Ala Ala Ile Thr Leu Arg Ala Gly Ala  
 500 505 510  
 Glu Phe Asp Gly Gln Ala Leu Ala Arg Thr Val Tyr Gly His Leu Pro  
 515 520 525  
 Gly Tyr Ala Leu Pro Leu Phe Val Arg Val Val Gly Ser Leu Ala His  
 530 535 540  
 Thr Thr Thr Phe Lys Ser Arg Lys Val Glu Leu Arg Asn Gln Ala Tyr  
 545 550 555 560  
 Gly Ala Asp Ile Glu Asp Pro Leu Tyr Val Leu Ala Gly Pro Asp Glu  
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 Gly Tyr Val Pro Tyr Tyr Ala Glu Tyr Pro Glu Glu Val Ser Leu Gly  
 580 585 590  
 Arg Arg Pro Gln Gly  
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 <211> 646  
 <212> PRT  
 <213> Mus musculus

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 Cys Val Tyr Val Gly Gly Gly Gly Trp Arg Phe Leu Arg Ile Val Cys  
 35 40 45  
 Lys Thr Ala Arg Arg Asp Leu Phe Gly Leu Ser Val Leu Ile Arg Val  
 50 55 60  
 Arg Leu Glu Leu Arg Arg His Arg Arg Ala Gly Asp Thr Ile Pro Cys  
 65 70 75 80  
 Ile Phe Gln Ala Val Ala Arg Arg Gln Pro Glu Arg Leu Ala Leu Val  
 85 90 95  
 Asp Ala Ser Ser Gly Ile Cys Trp Thr Phe Ala Gln Leu Asp Thr Tyr  
 100 105 110  
 Ser Asn Ala Val Ala Asn Leu Phe Arg Gln Leu Gly Phe Ala Pro Gly  
 115 120 125  
 Asp Val Val Ala Val Phe Leu Glu Gly Arg Pro Glu Phe Val Gly Leu  
 130 135 140  
 Trp Leu Gly Leu Ala Lys Ala Gly Val Val Ala Ala Leu Leu Asn Val  
 145 150 155 160  
 Asn Leu Arg Arg Glu Pro Leu Ala Phe Cys Leu Gly Thr Ser Ala Ala  
 165 170 175  
 Lys Ala Leu Ile Tyr Gly Gly Glu Met Ala Ala Ala Val Ala Glu Val  
 180 185 190  
 Ser Glu Gln Leu Gly Lys Ser Leu Leu Lys Phe Cys Ser Gly Asp Leu  
 195 200 205  
 Gly Pro Glu Ser Ile Leu Pro Asp Thr Gln Leu Leu Asp Pro Met Leu  
 210 215 220  
 Ala Glu Ala Pro Thr Thr Pro Leu Ala Gln Ala Pro Gly Lys Gly Met  
 225 230 235 240  
 Asp Asp Arg Leu Phe Tyr Ile Tyr Thr Ser Gly Thr Thr Gly Leu Pro  
 245 250 255  
 Lys Ala Ala Ile Val Val His Ser Arg Tyr Tyr Arg Ile Ala Ala Phe  
 260 265 270

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | His | His | Ser | Tyr | Ser | Met | Arg | Ala | Ala | Asp | Val | Leu | Tyr | Asp | Cys |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Leu | Pro | Leu | Tyr | His | Ser | Ala | Gly | Asn | Ile | Met | Gly | Val | Gly | Gln | Cys |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Val | Ile | Tyr | Gly | Leu | Thr | Val | Val | Leu | Arg | Lys | Lys | Phe | Ser | Ala | Ser |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Arg | Phe | Trp | Asp | Asp | Cys | Val | Lys | Tyr | Asn | Cys | Thr | Val | Val | Gln | Tyr |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Ile | Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Arg | Gln | Pro | Val | Arg | Asp | Val |
|     |     |     | 340 |     |     |     | 345 |     |     |     |     | 350 |     |     |     |
| Glu | Gln | Arg | His | Arg | Val | Arg | Leu | Ala | Val | Gly | Asn | Gly | Leu | Arg | Pro |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ala | Ile | Trp | Glu | Glu | Phe | Thr | Gln | Arg | Phe | Gly | Val | Pro | Gln | Ile | Gly |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Ile | Ala | Asn | Met | Asp |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gly | Lys | Val | Gly | Ser | Cys | Gly | Phe | Asn | Ser | Arg | Ile | Leu | Thr | His | Val |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Tyr | Pro | Ile | Arg | Leu | Val | Lys | Val | Asn | Glu | Asp | Thr | Met | Glu | Pro | Leu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Arg | Asp | Ser | Glu | Gly | Leu | Cys | Ile | Pro | Cys | Gln | Pro | Gly | Glu | Pro | Gly |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Leu | Leu | Val | Gly | Gln | Ile | Asn | Gln | Gln | Asp | Pro | Leu | Arg | Arg | Phe | Asp |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Gly | Tyr | Val | Ser | Asp | Ser | Ala | Thr | Asn | Lys | Lys | Ile | Ala | His | Ser | Val |
| 465 |     |     |     | 470 |     |     |     |     |     | 475 |     |     |     |     | 480 |
| Phe | Arg | Lys | Gly | Asp | Ser | Ala | Tyr | Leu | Ser | Gly | Asp | Val | Leu | Val | Met |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Asp | Glu | Leu | Gly | Tyr | Met | Tyr | Phe | Arg | Asp | Arg | Ser | Gly | Asp | Thr | Phe |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Arg | Trp | Arg | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Ala | Val | Leu |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Ser | Arg | Leu | Leu | Gly | Gln | Thr | Asp | Val | Ala | Val | Tyr | Gly | Val | Ala | Val |
|     | 530 |     |     |     |     | 535 |     |     |     |     |     | 540 |     |     |     |
| Pro | Gly | Val | Glu | Gly | Lys | Ala | Gly | Met | Ala | Ala | Ile | Ala | Asp | Pro | His |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Ser | Gln | Leu | Asp | Pro | Asn | Ser | Met | Tyr | Gln | Glu | Leu | Gln | Lys | Val | Leu |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |
| Ala | Ser | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Leu | Leu | Pro | Gln | Val | Asp |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Thr | Thr | Gly | Thr | Phe | Lys | Ile | Gln | Lys | Thr | Arg | Leu | Gln | Arg | Glu | Gly |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Phe | Asp | Pro | Arg | Gln | Thr | Ser | Asp | Arg | Leu | Phe | Phe | Leu | Asp | Leu | Lys |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |
| Gln | Gly | Arg | Tyr | Leu | Pro | Leu | Asp | Glu | Arg | Val | His | Ala | Arg | Ile | Cys |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |
| Ala | Gly | Asp | Phe | Ser | Leu |     |     |     |     |     |     |     |     |     |     |
|     |     |     |     | 645 |     |     |     |     |     |     |     |     |     |     |     |

&lt;210&gt; 93

&lt;211&gt; 620

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;220&gt;

&lt;221&gt; VARIANT

&lt;222&gt; (1)...(620)

&lt;223&gt; Xaa = Any Amino Acid

<400> 93

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | Pro | Val | Leu | Tyr | Thr | Gly | Leu | Ala | Gly | Leu | Leu | Leu | Leu | Pro |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu | Leu | Leu | Thr | Cys | Cys | Cys | Pro | Tyr | Leu | Leu | Gln | Asp | Val | Arg | Tyr |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | Leu | Arg | Leu | Ala | Asn | Met | Ala | Arg | Arg | Val | Arg | Ser | Tyr | Arg | Gln |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Arg | Arg | Pro | Val | Arg | Thr | Ile | Leu | Arg | Ala | Phe | Leu | Glu | Gln | Ala | Arg |
|     |     | 50  |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Lys | Thr | Pro | His | Lys | Pro | Phe | Leu | Leu | Phe | Arg | Asp | Glu | Thr | Leu | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Tyr | Ala | Gln | Val | Asp | Arg | Arg | Ser | Asn | Gln | Val | Ala | Arg | Ala | Leu | His |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Gln | Leu | Gly | Leu | Arg | Gln | Gly | Asp | Cys | Val | Ala | Leu | Phe | Met | Gly |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Glu | Pro | Ala | Tyr | Val | Trp | Ile | Trp | Leu | Gly | Leu | Leu | Lys | Leu | Gly |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |
| Cys | Pro | Met | Ala | Cys | Leu | Asn | Tyr | Asn | Ile | Arg | Ala | Lys | Ser | Leu | Leu |
|     |     | 130 |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| His | Cys | Phe | Gln | Cys | Cys | Gly | Ala | Lys | Val | Leu | Leu | Ala | Ser | Pro | Asp |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Leu | Gln | Glu | Ala | Val | Glu | Glu | Val | Leu | Pro | Thr | Leu | Lys | Lys | Asp | Ala |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Val | Ser | Val | Phe | Tyr | Val | Ser | Arg | Thr | Ser | Asn | Thr | Asn | Gly | Val | Asp |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Thr | Ile | Leu | Asp | Lys | Val | Asp | Gly | Val | Ser | Ala | Glu | Pro | Thr | Pro | Glu |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ser | Trp | Arg | Ser | Glu | Val | Thr | Phe | Thr | Thr | Pro | Ala | Val | Tyr | Ile | Tyr |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Thr | Ile | Asn | His | His |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Arg | Leu | Arg | Tyr | Gly | Thr | Gly | Leu | Ala | Met | Ser | Ser | Gly | Ile | Thr | Ala |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Gln | Asp | Val | Ile | Tyr | Thr | Thr | Met | Pro | Leu | Tyr | His | Ser | Ala | Ala | Leu |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Met | Ile | Gly | Leu | His | Gly | Cys | Ile | Val | Val | Gly | Ala | Xaa | Xaa | Xaa | Leu |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Cys | Asp | Lys | Phe | Ser | Ala | Ser | Gln | Phe | Trp | Asp | Asp | Cys | Arg | Lys | Tyr |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Asn | Val | Thr | Val | Ile | Gln | Tyr | Ile | Gly | Glu | Leu | Leu | Arg | Tyr | Leu | Cys |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Asn | Thr | Pro | Gln | Lys | Pro | Asn | Asp | Arg | Asp | His | Lys | Val | Lys | Lys | Ala |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Leu | Gly | Asn | Gly | Leu | Arg | Gly | Asp | Val | Trp | Arg | Glu | Phe | Ile | Lys | Arg |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Phe | Gly | Asp | Ile | His | Val | Tyr | Glu | Phe | Tyr | Ala | Ser | Thr | Glu | Gly | Asn |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Ile | Gly | Phe | Val | Asn | Tyr | Pro | Arg | Lys | Ile | Gly | Ala | Val | Gly | Arg | Ala |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Asn | Tyr | Leu | Gln | Arg | Lys | Val | Ala | Arg | Tyr | Glu | Leu | Ile | Lys | Tyr | Asp |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Val | Glu | Lys | Asp | Glu | Pro | Val | Arg | Asp | Ala | Asn | Gly | Tyr | Cys | Ile | Lys |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Val | Pro | Lys | Gly | Glu | Val | Gly | Leu | Leu | Val | Cys | Lys | Ile | Thr | Gln | Leu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Thr | Pro | Phe | Ile | Gly | Tyr | Ala | Gly | Gly | Lys | Thr | Gln | Thr | Glu | Lys | Lys |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |
| Lys | Leu | Arg | Asp | Val | Phe | Lys | Lys | Gly | Asp | Ile | Tyr | Phe | Asn | Ser | Gly |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Leu | Leu | Met | Ile | Asp | Arg | Glu | Asn | Phe | Val | Tyr | Phe | His | Asp | Arg |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Val | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ala | Thr | Thr | Glu |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     |     | 495 |
| Val | Ala | Asp | Ile | Val | Gly | Leu | Val | Asp | Phe | Val | Glu | Glu | Val | Asn | Val |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |
| Tyr | Gly | Val | Pro | Val | Pro | Gly | His | Glu | Gly | Arg | Ile | Gly | Met | Ala | Ser |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |
| Leu | Lys | Ile | Lys | Glu | Asn | Tyr | Glu | Phe | Asn | Gly | Lys | Lys | Leu | Phe | Gln |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |
| His | Ile | Ala | Glu | Tyr | Leu | Pro | Ser | Tyr | Ala | Arg | Pro | Arg | Phe | Leu | Arg |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |
| Ile | Gln | Asp | Thr | Ile | Glu | Ile | Thr | Gly | Thr | Phe | Lys | His | Arg | Lys | Val |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     |     | 575 |
| Thr | Leu | Met | Glu | Glu | Gly | Phe | Asn | Pro | Thr | Val | Ile | Lys | Asp | Thr | Leu |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |
| Tyr | Phe | Met | Asp | Asp | Ala | Glu | Lys | Thr | Phe | Val | Pro | Met | Thr | Glu | Asn |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |
| Ile | Tyr | Asn | Ala | Ile | Ile | Asp | Lys | Thr | Leu | Lys | Leu |     |     |     |     |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |

<210> 94  
 <211> 613  
 <212> PRT  
 <213> Mus musculus

|          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <400> 94 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Ala      | Ala | Asp | Pro | Glu | Ser | Ser | Glu | Ser | Gly | Cys | Ser | Leu | Ala | Trp | Arg |
| 1        |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Leu      | Ala | Tyr | Leu | Ala | Arg | Glu | Gln | Pro | Thr | His | Thr | Phe | Leu | Ile | His |
|          |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly      | Ala | Gln | Arg | Phe | Ser | Tyr | Ala | Glu | Ala | Glu | Arg | Glu | Ser | Asn | Arg |
|          |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Ile      | Ala | Arg | Ala | Phe | Leu | Arg | Ala | Arg | Gly | Trp | Thr | Gly | Gly | Arg | Arg |
|          | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Gly      | Ser | Gly | Arg | Gly | Ser | Thr | Glu | Glu | Gly | Ala | Arg | Val | Ala | Pro | Pro |
| 65       |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Ala      | Gly | Asp | Ala | Ala | Ala | Arg | Gly | Thr | Thr | Ala | Pro | Pro | Leu | Ala | Pro |
|          |     |     | 85  |     |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Gly      | Ala | Thr | Val | Ala | Leu | Leu | Leu | Pro | Ala | Gly | Pro | Asp | Phe | Leu | Trp |
|          |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Ile      | Trp | Phe | Gly | Leu | Ala | Lys | Ala | Gly | Leu | Arg | Thr | Ala | Phe | Val | Pro |
|          |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Thr      | Ala | Leu | Arg | Arg | Gly | Pro | Leu | Leu | His | Cys | Leu | Arg | Ser | Cys | Gly |
|          | 130 |     |     |     |     | 135 |     |     |     |     |     | 140 |     |     |     |
| Ala      | Ser | Ala | Leu | Val | Leu | Ala | Thr | Glu | Phe | Leu | Glu | Ser | Leu | Glu | Pro |
| 145      |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Asp      | Leu | Pro | Ala | Leu | Arg | Ala | Met | Gly | Leu | His | Leu | Trp | Ala | Thr | Gly |
|          |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Pro      | Glu | Thr | Asn | Val | Ala | Gly | Ile | Ser | Asn | Leu | Leu | Ser | Glu | Ala | Ala |
|          |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Asp      | Gln | Val | Asp | Glu | Pro | Val | Pro | Gly | Tyr | Leu | Ser | Ala | Pro | Gln | Asn |
|          |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Ile      | Met | Asp | Thr | Cys | Leu | Tyr | Ile | Phe | Thr | Ser | Gly | Thr | Thr | Gly | Leu |
|          | 210 |     |     |     |     | 215 |     |     |     |     |     | 220 |     |     |     |
| Pro      | Lys | Ala | Ala | Arg | Ile | Ser | His | Leu | Lys | Val | Leu | Gln | Cys | Gln | Gly |
| 225      |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Phe      | Tyr | His | Leu | Cys | Gly | Val | His | Gln | Glu | Asp | Val | Ile | Tyr | Leu | Ala |
|          |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |     | 255 |

Leu Pro Leu Tyr His Met Ser Gly Ser Leu Leu Gly Ile Val Gly Cys  
 260 265 270  
 Leu Gly Ile Gly Ala Thr Val Val Leu Lys Pro Lys Phe Ser Ala Ser  
 275 280 285  
 Gln Phe Trp Asp Asp Cys Gln Lys His Arg Val Thr Val Phe Gln Tyr  
 290 295 300  
 Ile Gly Glu Leu Cys Arg Tyr Leu Val Asn Gln Pro Pro Ser Lys Ala  
 305 310 315 320  
 Glu Phe Asp His Lys Val Arg Leu Ala Val Gly Ser Gly Leu Arg Pro  
 325 330 335  
 Asp Thr Trp Glu Arg Phe Leu Arg Arg Phe Gly Pro Leu Gln Ile Leu  
 340 345 350  
 Glu Thr Tyr Gly Met Thr Glu Gly Asn Val Ala Thr Phe Asn Tyr Thr  
 355 360 365  
 Gly Arg Gln Gly Ala Val Gly Arg Ala Ser Trp Leu Tyr Lys His Ile  
 370 375 380  
 Phe Pro Phe Ser Leu Ile Arg Tyr Asp Val Met Thr Gly Glu Pro Ile  
 385 390 395 400  
 Arg Asn Ala Gln Gly His Cys Met Thr Thr Ser Pro Gly Glu Pro Gly  
 405 410 415  
 Leu Leu Val Ala Pro Val Ser Gln Gln Ser Pro Phe Leu Gly Tyr Ala  
 420 425 430  
 Gly Ala Pro Glu Leu Ala Lys Asp Lys Leu Leu Lys Asp Val Phe Trp  
 435 440 445  
 Ser Gly Asp Val Phe Phe Asn Thr Gly Asp Leu Leu Val Cys Asp Glu  
 450 455 460  
 Gln Gly Phe Leu His Phe His Asp Arg Thr Gly Asp Thr Ile Arg Trp  
 465 470 475 480  
 Lys Gly Glu Asn Val Ala Thr Thr Glu Val Ala Glu Val Leu Glu Thr  
 485 490 495  
 Leu Asp Phe Leu Gln Glu Val Asn Ile Tyr Gly Val Thr Val Pro Gly  
 500 505 510  
 His Glu Gly Arg Ala Gly Met Ala Ala Leu Ala Leu Arg Pro Pro Gln  
 515 520 525  
 Ala Leu Asn Leu Val Gln Leu Tyr Ser His Val Ser Glu Asn Leu Pro  
 530 535 540  
 Pro Tyr Ala Arg Pro Arg Phe Leu Arg Leu Gln Glu Ser Leu Ala Thr  
 545 550 555 560  
 Thr Glu Thr Phe Lys Gln Gln Lys Val Arg Met Ala Asn Glu Gly Phe  
 565 570 575  
 Asp Pro Ser Val Leu Ser Asp Pro Leu Tyr Val Leu Asp Gln Asp Ile  
 580 585 590  
 Gly Ala Tyr Leu Pro Leu Thr Pro Ala Arg Tyr Ser Ala Leu Leu Ser  
 595 600 605  
 Gly Asp Leu Arg Ile  
 610

<210> 95  
 <211> 506  
 <212> PRT  
 <213> Mus musculus

<400> 95  
 His Ala Ser Ala His Ala Ser Gly Met Ala Lys Leu Gly Val Glu Ala  
 1 5 10 15  
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 20 25 30  
 Asp Thr Ser Lys Ala Arg Ala Leu Ile Phe Gly Ser Glu Met Ala Ser  
 35 40 45

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ile | Cys | Glu | Ile | His | Ala | Ser | Leu | Glu | Pro | Thr | Leu | Ser | Leu | Phe |
| 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Cys | Ser | Gly | Ser | Trp | Glu | Pro | Ser | Thr | Val | Pro | Val | Ser | Thr | Glu | His |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Leu | Asp | Pro | Leu | Leu | Glu | Asp | Ala | Pro | Lys | His | Leu | Pro | Ser | His | Pro |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Lys | Gly | Phe | Thr | Asp | Lys | Leu | Phe | Tyr | Ile | Tyr | Thr | Ser | Gly | Thr |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Thr | Gly | Leu | Pro | Lys | Ala | Ala | Ile | Val | Val | His | Ser | Arg | Tyr | Tyr | Arg |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Met | Ala | Ser | Leu | Val | Tyr | Tyr | Gly | Phe | Arg | Met | Arg | Pro | Asp | Asp | Ile |
| 130 |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Val | Tyr | Asp | Cys | Leu | Pro | Leu | Tyr | His | Ser | Ser | Arg | Lys | His | Arg | Gly |
| 145 |     |     |     | 150 |     |     |     |     |     | 155 |     |     |     |     | 160 |
| Asp | Trp | Gln | Cys | Leu | Leu | His | Gly | Met | Thr | Val | Val | Ile | Arg | Lys | Lys |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Phe | Ser | Ala | Ser | Arg | Phe | Trp | Asp | Asp | Cys | Ile | Lys | Tyr | Asn | Cys | Thr |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Val | Val | Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | Leu | Leu | Asn | Gln | Pro |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Pro | Arg | Glu | Ala | Glu | Ser | Arg | His | Lys | Val | Arg | Met | Ala | Leu | Gly | Asn |
| 210 |     |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Gly | Leu | Arg | Gln | Ser | Ile | Trp | Thr | Asp | Phe | Ser | Ser | Arg | Phe | His | Ile |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Pro | Gln | Val | Ala | Glu | Phe | Tyr | Gly | Ala | Thr | Glu | Cys | Asn | Cys | Ser | Leu |
|     |     |     | 245 |     |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Gly | Asn | Phe | Asp | Ser | Arg | Val | Gly | Ala | Cys | Gly | Phe | Asn | Ser | Arg | Ile |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
| Leu | Ser | Phe | Val | Tyr | Pro | Ile | Arg | Leu | Val | Arg | Val | Asn | Glu | Asp | Thr |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
| Met | Glu | Leu | Ile | Arg | Gly | Pro | Asp | Gly | Val | Cys | Ile | Pro | Cys | Gln | Pro |
| 290 |     |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Gly | Gln | Pro | Gly | Gln | Leu | Val | Gly | Arg | Ile | Ile | Gln | Gln | Asp | Pro | Leu |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |
| Arg | Arg | Phe | Asp | Gly | Tyr | Leu | Asn | Gln | Gly | Ala | Asn | Asn | Lys | Lys | Ile |
|     |     |     | 325 |     |     |     |     |     | 330 |     |     |     |     | 335 |     |
| Ala | Asn | Asp | Val | Phe | Lys | Lys | Gly | Asp | Gln | Ala | Tyr | Leu | Thr | Gly | Asp |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |
| Val | Leu | Val | Met | Asp | Glu | Leu | Gly | Tyr | Leu | Tyr | Phe | Arg | Asp | Arg | Thr |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |
| Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val |
| 370 |     |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
| Glu | Gly | Thr | Leu | Ser | Arg | Leu | Leu | His | Met | Ala | Asp | Val | Ala | Val | Tyr |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |
| Gly | Val | Glu | Val | Pro | Gly | Thr | Glu | Gly | Arg | Ala | Gly | Met | Ala | Ala | Val |
|     |     |     | 405 |     |     |     |     |     | 410 |     |     |     |     | 415 |     |
| Ala | Ser | Pro | Ile | Ser | Asn | Cys | Asp | Leu | Glu | Ser | Phe | Ala | Gln | Thr | Leu |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |
| Lys | Lys | Glu | Leu | Pro | Leu | Tyr | Ala | Arg | Pro | Ile | Phe | Leu | Arg | Phe | Leu |
|     |     | 435 |     |     |     |     | 440 |     |     |     | 445 |     |     |     |     |
| Pro | Glu | Leu | His | Lys | Thr | Gly | Thr | Phe | Lys | Phe | Gln | Lys | Thr | Glu | Leu |
| 450 |     |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |
| Arg | Lys | Glu | Gly | Phe | Asp | Pro | Ser | Val | Val | Lys | Asp | Pro | Leu | Phe | Tyr |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |
| Leu | Asp | Ala | Arg | Lys | Gly | Cys | Tyr | Val | Ala | Leu | Asp | Gln | Glu | Ala | Tyr |
|     |     |     | 485 |     |     |     |     |     | 490 |     |     |     |     | 495 |     |
| Thr | Arg | Ile | Gln | Ala | Gly | Glu | Glu | Lys | Leu |     |     |     |     |     |     |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     |     |     |     |

<210> 96  
 <211> 662  
 <212> PRT  
 <213> Mus musculus

<400> 96  
 Met Ala Leu Ala Leu Arg Trp Phe Leu Gly Asp Pro Thr Cys Leu Val  
 1 5 10 15  
 Leu Leu Gly Leu Ala Leu Leu Gly Arg Pro Trp Ile Ser Ser Trp Met  
 20 25 30  
 Pro His Trp Leu Ser Leu Val Gly Ala Ala Leu Thr Leu Phe Leu Leu  
 35 40 45  
 Pro Leu Gln Pro Pro Pro Gly Leu Arg Trp Leu His Lys Asp Val Ala  
 50 55 60  
 Phe Thr Phe Lys Met Leu Phe Tyr Gly Leu Lys Phe Arg Arg Arg Leu  
 65 70 75 80  
 Asn Lys His Pro Pro Glu Thr Phe Val Asp Ala Leu Glu Arg Gln Ala  
 85 90 95  
 Leu Ala Trp Pro Asp Arg Val Ala Leu Val Cys Thr Gly Ser Glu Gly  
 100 105 110  
 Ser Ser Ile Thr Asn Ser Gln Leu Asp Ala Arg Ser Cys Gln Ala Ala  
 115 120 125  
 Trp Val Leu Lys Ala Lys Leu Lys Asp Ala Val Ile Gln Asn Thr Arg  
 130 135 140  
 Asp Ala Ala Ala Ile Leu Val Leu Pro Ser Lys Thr Ile Ser Ala Leu  
 145 150 155 160  
 Ser Val Phe Leu Gly Leu Ala Lys Leu Gly Cys Pro Val Ala Trp Ile  
 165 170 175  
 Asn Pro His Ser Arg Gly Met Pro Leu Leu His Ser Val Arg Ser Ser  
 180 185 190  
 Gly Ala Ser Val Leu Ile Val Asp Pro Asp Leu Gln Glu Asn Leu Glu  
 195 200 205  
 Glu Val Leu Pro Lys Leu Leu Ala Glu Asn Ile His Cys Phe Tyr Leu  
 210 215 220  
 Gly His Ser Ser Pro Thr Pro Gly Val Glu Ala Leu Gly Ala Ser Leu  
 225 230 235 240  
 Asp Ala Ala Pro Ser Asp Pro Val Pro Ala Ser Leu Arg Ala Thr Ile  
 245 250 255  
 Lys Trp Lys Ser Pro Ala Ile Phe Ile Phe Thr Ser Gly Thr Thr Gly  
 260 265 270  
 Leu Pro Lys Pro Ala Ile Leu Ser His Glu Arg Val Ile Gln Val Ser  
 275 280 285  
 Asn Val Leu Ser Phe Cys Gly Cys Arg Ala Asp Asp Val Val Tyr Asp  
 290 295 300  
 Val Leu Pro Leu Tyr His Thr Ile Gly Leu Val Leu Gly Phe Leu Gly  
 305 310 315 320  
 Cys Leu Gln Val Gly Ala Thr Cys Val Leu Ala Pro Lys Phe Ser Ala  
 325 330 335  
 Ser Arg Phe Trp Ala Glu Cys Arg Gln His Gly Val Thr Val Ile Leu  
 340 345 350  
 Tyr Val Gly Glu Ile Leu Arg Tyr Leu Cys Asn Val Pro Glu Gln Pro  
 355 360 365  
 Glu Asp Lys Ile His Thr Val Arg Leu Ala Met Gly Thr Gly Leu Arg  
 370 375 380  
 Ala Asn Val Trp Lys Asn Phe Gln Gln Arg Phe Gly Pro Ile Arg Ile  
 385 390 395 400  
 Trp Glu Phe Tyr Gly Ser Thr Glu Gly Asn Val Gly Leu Met Asn Tyr  
 405 410 415

Val Gly His Cys Gly Ala Val Gly Arg Thr Ser Cys Ile Leu Arg Met  
 420 425 430  
 Leu Thr Pro Phe Glu Leu Val Gln Phe Asp Ile Glu Thr Ala Glu Pro  
 435 440 445  
 Leu Arg Asp Lys Gln Gly Phe Cys Ile Pro Val Glu Pro Gly Lys Pro  
 450 455 460  
 Gly Leu Leu Leu Thr Lys Val Arg Lys Asn Gln Pro Phe Leu Gly Tyr  
 465 470 475 480  
 Arg Gly Ser Gln Ala Glu Ser Asn Arg Lys Leu Val Ala Asn Val Arg  
 485 490 495  
 Arg Val Gly Asp Leu Tyr Phe Asn Thr Gly Asp Val Leu Thr Leu Asp  
 500 505 510  
 Gln Glu Gly Phe Phe Tyr Phe Gln Asp Arg Leu Gly Asp Thr Phe Arg  
 515 520 525  
 Trp Lys Gly Glu Asn Val Ser Thr Gly Glu Val Glu Cys Val Leu Ser  
 530 535 540  
 Ser Leu Asp Phe Leu Glu Val Asn Val Tyr Gly Val Pro Val Pro  
 545 550 555 560  
 Gly Cys Glu Gly Lys Val Gly Met Ala Ala Val Lys Leu Ala Pro Gly  
 565 570 575  
 Lys Thr Phe Asp Gly Gln Lys Leu Tyr Gln His Val Arg Ser Trp Leu  
 580 585 590  
 Pro Ala Tyr Ala Thr Pro His Phe Ile Arg Ile Gln Asp Ser Leu Glu  
 595 600 605  
 Ile Thr Asn Thr Tyr Lys Leu Val Lys Ser Arg Leu Val Arg Glu Gly  
 610 615 620  
 Phe Asp Val Gly Ile Ile Ala Asp Pro Leu Tyr Ile Leu Asp Asn Lys  
 625 630 635 640  
 Ala Gln Thr Phe Arg Ser Leu Met Pro Asp Val Tyr Gln Ala Val Cys  
 645 650 655  
 Glu Gly Thr Trp Asn Leu  
 660

&lt;210&gt; 97

&lt;211&gt; 650

&lt;212&gt; PRT

&lt;213&gt; Caenorhabditis elegans

&lt;400&gt; 97

Met Lys Leu Glu Glu Leu Val Thr Val Met Leu Leu Thr Val Ala Val  
 1 5 10 15  
 Ile Ala Gln Asn Leu Pro Ile Gly Val Ile Leu Ala Gly Val Leu Ile  
 20 25 30  
 Leu Tyr Ile Thr Val Val His Gly Asp Phe Ile Tyr Arg Ser Tyr Leu  
 35 40 45  
 Thr Leu Asn Arg Asp Leu Thr Gly Leu Ala Leu Ile Ile Glu Val Lys  
 50 55 60  
 Ile Asp Leu Trp Trp Arg Leu His Gln Asn Lys Gly Ile His Glu Leu  
 65 70 75 80  
 Phe Leu Asp Ile Val Lys Lys Asn Pro Asn Lys Pro Ala Met Ile Asp  
 85 90 95  
 Ile Glu Thr Asn Thr Thr Glu Thr Tyr Ala Glu Phe Asn Ala His Cys  
 100 105 110  
 Asn Arg Tyr Ala Asn Tyr Phe Gln Gly Leu Gly Tyr Arg Ser Gly Asp  
 115 120 125  
 Val Val Ala Leu Tyr Met Glu Asn Ser Val Glu Phe Val Ala Ala Trp  
 130 135 140  
 Met Gly Leu Ala Lys Ile Gly Val Val Thr Ala Trp Ile Asn Ser Asn  
 145 150 155 160



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Leu | Lys | Arg | Glu | Gln | Leu | Val | His | Cys | Ile | Thr | Ala | Ser | Lys | Thr | Lys |  |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |  |
| Ala | Ile | Ile | Thr | Ser | Val | Thr | Leu | Gln | Asn | Ile | Met | Leu | Asp | Ala | Ile |  |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |
| Asp | Gln | Lys | Leu | Phe | Asp | Val | Glu | Gly | Ile | Glu | Val | Tyr | Ser | Val | Gly |  |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |
| Glu | Pro | Lys | Lys | Asn | Ser | Gly | Phe | Lys | Asn | Leu | Lys | Lys | Lys | Leu | Asp |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |
| Ala | Gln | Ile | Thr | Thr | Glu | Pro | Lys | Thr | Leu | Asp | Ile | Val | Asp | Phe | Lys |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |
| Ser | Ile | Leu | Cys | Phe | Ile | Tyr | Thr | Ser | Gly | Thr | Thr | Gly | Met | Pro | Lys |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |  |
| Ala | Ala | Val | Met | Lys | His | Phe | Arg | Tyr | Tyr | Ser | Ile | Ala | Val | Gly | Ala |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |  |
| Ala | Lys | Ser | Phe | Gly | Ile | Arg | Pro | Ser | Asp | Arg | Met | Tyr | Val | Ser | Met |  |  |
|     | 275 |     |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |  |
| Pro | Ile | Tyr | His | Thr | Ala | Ala | Gly | Ile | Leu | Gly | Val | Gly | Gln | Ala | Leu |  |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |  |
| Leu | Gly | Gly | Ser | Ser | Cys | Val | Ile | Arg | Lys | Lys | Phe | Ser | Ala | Ser | Asn |  |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |  |
| Phe | Trp | Arg | Asp | Cys | Val | Lys | Tyr | Asp | Cys | Thr | Val | Ser | Gln | Tyr | Ile |  |  |
|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     |     | 335 |     |  |  |
| Gly | Glu | Ile | Cys | Arg | Tyr | Leu | Leu | Ala | Gln | Pro | Val | Val | Glu | Glu | Glu |  |  |
|     |     | 340 |     |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |  |
| Ser | Arg | His | Arg | Met | Arg | Leu | Leu | Val | Gly | Asn | Gly | Leu | Arg | Ala | Glu |  |  |
|     | 355 |     |     |     |     | 360 |     |     |     |     |     | 365 |     |     |     |  |  |
| Ile | Trp | Gln | Pro | Phe | Val | Asp | Arg | Phe | Arg | Val | Arg | Ile | Gly | Glu | Leu |  |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |  |
| Tyr | Gly | Ser | Thr | Glu | Gly | Thr | Ser | Ser | Leu | Val | Asn | Ile | Asp | Gly | His |  |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |  |
| Val | Gly | Ala | Cys | Gly | Phe | Leu | Pro | Ile | Ser | Pro | Leu | Thr | Lys | Lys | Met |  |  |
|     |     |     | 405 |     |     |     |     | 410 |     |     |     |     |     | 415 |     |  |  |
| His | Pro | Val | Arg | Leu | Ile | Lys | Val | Asp | Asp | Val | Thr | Gly | Glu | Ala | Ile |  |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |  |
| Arg | Thr | Ser | Asp | Gly | Leu | Cys | Ile | Ala | Cys | Asn | Pro | Gly | Glu | Ser | Gly |  |  |
|     | 435 |     |     |     |     | 440 |     |     |     |     |     | 445 |     |     |     |  |  |
| Ala | Met | Val | Ser | Thr | Ile | Arg | Lys | Asn | Asn | Pro | Leu | Leu | Gln | Phe | Glu |  |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |  |
| Gly | Tyr | Leu | Asn | Lys | Lys | Glu | Thr | Asn | Lys | Lys | Ile | Ile | Arg | Asp | Val |  |  |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |  |
| Phe | Ala | Lys | Gly | Asp | Ser | Cys | Phe | Leu | Thr | Gly | Asp | Leu | Leu | His | Trp |  |  |
|     |     |     | 485 |     |     |     |     | 490 |     |     |     |     |     | 495 |     |  |  |
| Asp | Arg | Leu | Gly | Tyr | Val | Tyr | Phe | Lys | Asp | Arg | Thr | Gly | Asp | Thr | Phe |  |  |
|     |     | 500 |     |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |  |
| Arg | Trp | Lys | Gly | Glu | Asn | Val | Ser | Thr | Thr | Glu | Val | Glu | Ala | Ile | Leu |  |  |
|     | 515 |     |     |     |     | 520 |     |     |     |     |     | 525 |     |     |     |  |  |
| His | Pro | Ile | Thr | Gly | Leu | Ser | Asp | Ala | Thr | Val | Tyr | Gly | Val | Glu | Val |  |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |  |
| Pro | Gln | Arg | Glu | Gly | Arg | Val | Gly | Met | Ala | Ser | Val | Val | Arg | Val | Val |  |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |  |
| Ser | His | Glu | Glu | Asp | Glu | Thr | Gln | Phe | Val | His | Arg | Val | Gly | Ala | Arg |  |  |
|     |     |     | 565 |     |     |     |     | 570 |     |     |     |     |     | 575 |     |  |  |
| Leu | Ala | Ser | Ser | Leu | Thr | Ser | Tyr | Ala | Ile | Pro | Gln | Phe | Met | Arg | Ile |  |  |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |  |  |
| Cys | Gln | Asp | Val | Glu | Lys | Thr | Gly | Thr | Phe | Lys | Leu | Val | Lys | Thr | Asn |  |  |
|     | 595 |     |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |  |  |
| Leu | Gln | Arg | Leu | Gly | Ile | Met | Asp | Ala | Pro | Ser | Asp | Ser | Ile | Tyr | Ile |  |  |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |  |  |

Tyr Asn Ser Glu Asn Arg Asn Phe Val Pro Phe Asp Asn Asp Leu Arg  
 625 630 635 640  
 Cys Lys Val Ser Leu Gly Ser Tyr Pro Phe  
 645 650

<210> 98  
 <211> 623  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 98  
 Met Ser Pro Ile Gln Val Val Val Phe Ala Leu Ser Arg Ile Phe Leu  
 1 5 10 15  
 Leu Leu Phe Arg Leu Ile Lys Leu Ile Ile Thr Pro Ile Gln Lys Ser  
 20 25 30  
 Leu Gly Tyr Leu Phe Gly Asn Tyr Phe Asp Glu Leu Asp Arg Lys Tyr  
 35 40 45  
 Arg Tyr Lys Glu Asp Trp Tyr Ile Ile Pro Tyr Phe Leu Lys Ser Val  
 50 55 60  
 Phe Cys Tyr Ile Ile Asp Val Arg Arg His Arg Phe Gln Asn Trp Tyr  
 65 70 75 80  
 Leu Phe Ile Lys Gln Val Gln Gln Asn Gly Asp His Leu Ala Ile Ser  
 85 90 95  
 Tyr Thr Arg Pro Met Ala Glu Lys Gly Glu Phe Gln Leu Glu Thr Phe  
 100 105 110  
 Thr Tyr Ile Glu Thr Tyr Asn Ile Val Leu Arg Leu Ser His Ile Leu  
 115 120 125  
 His Phe Asp Tyr Asn Val Gln Ala Gly Asp Tyr Val Ala Ile Asp Cys  
 130 135 140  
 Thr Asn Lys Pro Leu Phe Val Phe Leu Trp Leu Ser Leu Trp Asn Ile  
 145 150 155 160  
 Gly Ala Ile Pro Ala Phe Leu Asn Tyr Asn Thr Lys Gly Thr Pro Leu  
 165 170 175  
 Val His Ser Leu Lys Ile Ser Asn Ile Thr Gln Val Phe Ile Asp Pro  
 180 185 190  
 Asp Ala Ser Asn Pro Ile Arg Glu Ser Glu Glu Glu Ile Lys Asn Ala  
 195 200 205  
 Leu Pro Asp Val Lys Leu Asn Tyr Leu Glu Glu Gln Asp Leu Met His  
 210 215 220  
 Glu Leu Leu Asn Ser Gln Ser Pro Glu Phe Leu Gln Gln Asp Asn Val  
 225 230 235 240  
 Arg Thr Pro Leu Gly Leu Thr Asp Phe Lys Pro Ser Met Leu Ile Tyr  
 245 250 255  
 Thr Ser Gly Thr Thr Gly Leu Pro Lys Ser Ala Ile Met Ser Trp Arg  
 260 265 270  
 Lys Ser Ser Val Gly Cys Gln Val Phe Gly His Val Leu His Met Thr  
 275 280 285  
 Asn Glu Ser Thr Val Phe Thr Ala Met Pro Leu Phe His Ser Thr Ala  
 290 295 300  
 Ala Leu Leu Gly Ala Cys Ala Ile Leu Ser His Gly Gly Cys Leu Ala  
 305 310 315 320  
 Leu Ser His Lys Phe Ser Ala Ser Thr Phe Trp Lys Gln Val Tyr Leu  
 325 330 335  
 Thr Gly Ala Thr His Ile Gln Tyr Val Gly Glu Val Cys Arg Tyr Leu  
 340 345 350  
 Leu His Thr Pro Ile Ser Lys Tyr Glu Lys Met His Lys Val Lys Val  
 355 360 365  
 Ala Tyr Gly Asn Gly Leu Arg Pro Asp Ile Trp Gln Asp Phe Arg Lys  
 370 375 380

Arg Phe Asn Ile Glu Val Ile Gly Glu Phe Tyr Ala Ala Thr Glu Ala  
 385 390 395 400  
 Pro Phe Ala Thr Thr Thr Phe Gln Lys Gly Asp Phe Gly Ile Gly Ala  
 405 410 415  
 Cys Arg Asn Tyr Gly Thr Ile Ile Gln Trp Phe Leu Ser Phe Gln Gln  
 420 425 430  
 Thr Leu Val Arg Met Asp Pro Asn Asp Asp Ser Val Ile Tyr Arg Asn  
 435 440 445  
 Ser Lys Gly Phe Cys Glu Val Ala Pro Val Gly Glu Pro Gly Glu Met  
 450 455 460  
 Leu Met Arg Ile Phe Phe Pro Lys Lys Pro Glu Thr Ser Phe Gln Gly  
 465 470 475 480  
 Tyr Leu Gly Asn Ala Lys Glu Thr Lys Ser Lys Val Val Arg Asp Val  
 485 490 495  
 Phe Arg Arg Gly Asp Ala Trp Tyr Arg Cys Gly Asp Leu Leu Lys Ala  
 500 505 510  
 Asp Glu Tyr Gly Leu Trp Tyr Phe Leu Asp Arg Met Gly Asp Thr Phe  
 515 520 525  
 Arg Trp Lys Ser Glu Asn Val Ser Thr Thr Glu Val Glu Asp Gln Leu  
 530 535 540  
 Thr Ala Ser Asn Lys Glu Gln Tyr Ala Gln Val Leu Val Val Gly Ile  
 545 550 555 560  
 Lys Val Pro Lys Tyr Glu Gly Arg Ala Gly Phe Ala Val Ile Lys Leu  
 565 570 575  
 Thr Asp Asn Ser Leu Asp Ile Thr Ala Lys Thr Lys Leu Leu Asn Asp  
 580 585 590  
 Ser Leu Ser Arg Leu Asn Leu Pro Ser Tyr Ala Met Pro Leu Phe Val  
 595 600 605  
 Lys Phe Val Asp Glu Ile Lys Met Thr Asp Asn Leu Ile Lys Phe  
 610 615 620

&lt;210&gt; 99

&lt;211&gt; 597

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium tuberculosis

&lt;400&gt; 99

Met Ser Asp Tyr Tyr Gly Gly Ala His Thr Thr Val Arg Leu Ile Asp  
 1 5 10 15  
 Leu Ala Thr Arg Met Pro Arg Val Leu Ala Asp Thr Pro Val Ile Val  
 20 25 30  
 Arg Gly Ala Met Thr Gly Leu Leu Ala Arg Pro Asn Ser Lys Ala Ser  
 35 40 45  
 Ile Gly Thr Val Phe Gln Asp Arg Ala Ala Arg Tyr Gly Asp Arg Val  
 50 55 60  
 Phe Leu Lys Phe Gly Asp Gln Gln Leu Thr Tyr Arg Asp Ala Asn Ala  
 65 70 75 80  
 Thr Ala Asn Arg Tyr Ala Ala Val Leu Ala Ala Arg Gly Val Gly Pro  
 85 90 95  
 Gly Asp Val Val Gly Ile Met Leu Arg Asn Ser Pro Ser Thr Val Leu  
 100 105 110  
 Ala Met Leu Ala Thr Val Lys Cys Gly Ala Ile Ala Gly Met Leu Asn  
 115 120 125  
 Tyr His Gln Arg Gly Glu Val Leu Ala His Ser Leu Gly Leu Leu Asp  
 130 135 140  
 Ala Lys Val Leu Ile Ala Glu Ser Asp Leu Val Ser Ala Val Ala Glu  
 145 150 155 160  
 Cys Gly Ala Ser Arg Gly Arg Val Ala Gly Asp Val Leu Thr Val Glu  
 165 170 175

Asp Val Glu Arg Phe Ala Thr Thr Ala Pro Ala Thr Asn Pro Ala Ser  
 180 185 190  
 Ala Ser Ala Val Gln Ala Lys Asp Thr Ala Phe Tyr Ile Phe Thr Ser  
 195 200 205  
 Gly Thr Thr Gly Phe Pro Lys Ala Ser Val Met Thr His His Arg Trp  
 210 215 220  
 Leu Arg Ala Leu Ala Val Phe Gly Gly Met Gly Leu Arg Leu Lys Gly  
 225 230 235 240  
 Ser Asp Thr Leu Tyr Ser Cys Leu Pro Leu Tyr His Asn Asn Ala Leu  
 245 250 255  
 Thr Val Ala Val Ser Ser Val Ile Asn Ser Gly Ala Thr Leu Ala Leu  
 260 265 270  
 Gly Lys Ser Phe Ser Ala Ser Arg Phe Trp Asp Glu Val Ile Ala Asn  
 275 280 285  
 Arg Ala Thr Ala Phe Val Tyr Ile Gly Glu Ile Cys Arg Tyr Leu Leu  
 290 295 300  
 Asn Gln Pro Ala Lys Pro Thr Asp Arg Ala His Gln Val Arg Val Ile  
 305 310 315 320  
 Cys Gly Asn Gly Leu Arg Pro Glu Ile Trp Asp Glu Phe Thr Thr Arg  
 325 330 335  
 Phe Gly Val Ala Arg Val Cys Glu Phe Tyr Ala Ala Ser Glu Gly Asn  
 340 345 350  
 Ser Ala Phe Ile Asn Ile Phe Asn Val Pro Arg Thr Ala Gly Val Ser  
 355 360 365  
 Pro Met Pro Leu Ala Phe Val Glu Tyr Asp Leu Asp Thr Gly Asp Pro  
 370 375 380  
 Leu Arg Asp Ala Ser Gly Arg Val Arg Arg Val Pro Asp Gly Glu Pro  
 385 390 395 400  
 Gly Leu Leu Leu Ser Arg Val Asn Arg Leu Gln Pro Phe Asp Gly Tyr  
 405 410 415  
 Thr Asp Pro Val Ala Ser Glu Lys Lys Leu Val Arg Asn Ala Phe Arg  
 420 425 430  
 Asp Gly Asp Cys Trp Phe Asn Thr Gly Asp Val Met Ser Pro Gln Gly  
 435 440 445  
 Met Gly His Ala Ala Phe Val Asp Arg Leu Gly Asp Thr Phe Arg Trp  
 450 455 460  
 Lys Gly Glu Asn Val Ala Thr Thr Gln Val Glu Ala Ala Leu Ala Ser  
 465 470 475 480  
 Asp Gln Thr Val Glu Glu Cys Thr Val Tyr Gly Val Gln Ile Pro Arg  
 485 490 495  
 Thr Gly Gly Arg Ala Gly Met Ala Ala Ile Thr Leu Arg Ala Gly Ala  
 500 505 510  
 Glu Phe Asp Gly Gln Ala Leu Ala Arg Thr Val Tyr Gly His Leu Pro  
 515 520 525  
 Gly Tyr Ala Leu Pro Leu Phe Val Arg Val Val Gly Ser Leu Ala His  
 530 535 540  
 Thr Thr Thr Phe Lys Ser Arg Lys Val Glu Leu Arg Asn Gln Ala Tyr  
 545 550 555 560  
 Gly Ala Asp Ile Glu Asp Pro Leu Tyr Val Leu Ala Gly Pro Asp Glu  
 565 570 575  
 Gly Tyr Val Pro Tyr Tyr Ala Glu Tyr Pro Glu Glu Val Ser Leu Gly  
 580 585 590  
 Arg Arg Pro Gln Gly  
 595

&lt;210&gt; 100

&lt;211&gt; 304

&lt;212&gt; PRT

&lt;213&gt; consensus FATP signature sequence

<400> 100  
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 1 5 10 15  
 Val His Ser Arg Tyr Tyr Arg Gly Ala Ala Leu His Ser Gly Arg Met  
 20 25 30  
 Arg Pro Asp Val Val Tyr Asp Cys Leu Pro Leu Tyr His Ser Ala Ala  
 35 40 45  
 Leu Ile Leu Gly Ile Gly Gln Cys Leu Leu His Gly Ala Thr Val Val  
 50 55 60  
 Leu Arg Lys Lys Phe Ser Ala Ser Arg Phe Trp Asp Asp Cys Val Lys  
 65 70 75 80  
 Tyr Asn Val Thr Val Ile Gln Tyr Ile Gly Glu Leu Cys Arg Tyr Leu  
 85 90 95  
 Leu Asn Gln Pro Pro Arg Pro Ala Glu Arg Arg His Lys Val Arg Leu  
 100 105 110  
 Ala Val Gly Asn Gly Leu Arg Pro Asp Ile Trp Glu Glu Phe Val Ser  
 115 120 125  
 Arg Phe Gly Ile Pro Gln Ile Gly Glu Phe Tyr Gly Ala Thr Glu Gly  
 130 135 140  
 Asn Cys Ser Leu Met Asn Tyr Asp Gly Lys Val Gly Ala Cys Gly Ser  
 145 150 155 160  
 Arg Ile Leu Lys Lys Val Tyr Pro Ile Arg Leu Val Lys Val Asp Glu  
 165 170 175  
 Asp Thr Gly Glu Pro Ile Arg Asp Ala Gln Gly Leu Cys Ile Pro Cys  
 180 185 190  
 Gln Pro Gly Glu Pro Gly Leu Leu Val Gly Arg Ile Asn Gln Gln Asp  
 195 200 205  
 Pro Phe Arg Gly Phe Gly Tyr Gly Ser Glu Gly Ala Thr Asn Lys Lys  
 210 215 220  
 Ile Ala Arg Asp Val Phe Lys Lys Gly Asp Val Ala Phe Asn Thr Gly  
 225 230 235 240  
 Asp Val Leu Val Met Asp Glu Leu Gly Tyr Leu Tyr Phe Arg Asp Arg  
 245 250 255  
 Thr Gly Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ser Thr Thr Glu  
 260 265 270  
 Val Glu Gly Val Leu Ser Arg Leu Asp Phe Val Ala Glu Val Asn Val  
 275 280 285  
 Tyr Gly Val Thr Val Pro Gly His Glu Gly Arg Ala Gly Met Ala Ala  
 290 295 300

<210> 101  
 <211> 2166  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (19)...(2124)

<400> 101  
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 Met Phe Ala Ser Gly Trp Asn Gln Thr Val Pro  
 1 5 10  
 ata gag gaa gcg ggc tcc atg gct gcc ctc ctg ctg ctg ccc ctg ctg 99  
 Ile Glu Glu Ala Gly Ser Met Ala Ala Leu Leu Leu Leu Pro Leu Leu  
 15 20 25  
 ctg ttg cta ccg ctg ctg ctg ctg ctg aag cta cac ctc tgg ccg cag 147  
 Leu Leu Leu Pro Leu Leu Leu Leu Leu Lys Leu His Leu Trp Pro Gln  
 30 35 40

|                                                                 |      |
|-----------------------------------------------------------------|------|
| ttg cgc tgg ctt ccg gcg gac ttg gcc ttt gcg gtg cga gct ctg tgc | 195  |
| Leu Arg Trp Leu Pro Ala Asp Leu Ala Phe Ala Val Arg Ala Leu Cys |      |
| 45 50 55                                                        |      |
| tgc aaa agg gct ctt cga gct cgc gcc ctg gcc gcg gct gcc gcc gac | 243  |
| Cys Lys Arg Ala Leu Arg Ala Arg Ala Leu Ala Ala Ala Ala Ala Asp |      |
| 60 65 70 75                                                     |      |
| ccg gaa ggt ccc gag ggg ggc tgc agc ctg gcc tgg cgc ctc gcg gaa | 291  |
| Pro Glu Gly Pro Glu Gly Gly Cys Ser Leu Ala Trp Arg Leu Ala Glu |      |
| 80 85 90                                                        |      |
| ctg gcc cag cag cgc gcc gcg cac acc ttt ctc att cac ggc tcg cgg | 339  |
| Leu Ala Gln Gln Arg Ala Ala His Thr Phe Leu Ile His Gly Ser Arg |      |
| 95 100 105                                                      |      |
| cgc ttt agc tac tca gag gcg gag cgc gag agt aac agg gct gca cgc | 387  |
| Arg Phe Ser Tyr Ser Glu Ala Glu Arg Glu Ser Asn Arg Ala Ala Arg |      |
| 110 115 120                                                     |      |
| gcc ttc cta cgt gcg cta ggc tgg gac tgg gga ccc gac ggc ggc gac | 435  |
| Ala Phe Leu Arg Ala Leu Gly Trp Asp Trp Gly Pro Asp Gly Gly Asp |      |
| 125 130 135                                                     |      |
| agc ggc gag ggg agc gct gga gaa ggc gag cgg gca gcg ccg gga gcc | 483  |
| Ser Gly Glu Gly Ser Ala Gly Glu Gly Glu Arg Ala Ala Pro Gly Ala |      |
| 140 145 150 155                                                 |      |
| gga gat gca gcg gcc gga agc ggc gcg gag ttt gcc gga ggg gac ggt | 531  |
| Gly Asp Ala Ala Ala Gly Ser Gly Ala Glu Phe Ala Gly Gly Asp Gly |      |
| 160 165 170                                                     |      |
| gcc gcc aga ggt gga gag ccc gcc cct ctg tca cct gga gca         | 579  |
| Ala Ala Arg Gly Gly Gly Glu Pro Ala Ala Pro Leu Ser Pro Gly Ala |      |
| 175 180 185                                                     |      |
| act gtg gcg ctg ctc ctc ccc gct ggc cca gag ttt ctg tgg ctc tgg | 627  |
| Thr Val Ala Leu Leu Leu Pro Ala Gly Pro Glu Phe Leu Trp Leu Trp |      |
| 190 195 200                                                     |      |
| ttc ggg ctg gcc aag gcc ggc ctg cgc act gcc ttt gtg ccc acc gcc | 675  |
| Phe Gly Leu Ala Lys Ala Gly Leu Arg Thr Ala Phe Val Pro Thr Ala |      |
| 205 210 215                                                     |      |
| ctg cgc cgg ggc ccc ctg ctg cac tgc ctc cgc agc tgc ggc gcg cgc | 723  |
| Leu Arg Arg Gly Pro Leu Leu His Cys Leu Arg Ser Cys Gly Ala Arg |      |
| 220 225 230 235                                                 |      |
| gcg ctg gtg ctg gcg cca gag ttt ctg gag tcc ctg gag ccg gac ctg | 771  |
| Ala Leu Val Leu Ala Pro Glu Phe Leu Glu Ser Leu Glu Pro Asp Leu |      |
| 240 245 250                                                     |      |
| ccc gcc ctg aga gcc atg ggg ctc cac ctg tgg gct gca ggc cca gga | 819  |
| Pro Ala Leu Arg Ala Met Gly Leu His Leu Trp Ala Ala Gly Pro Gly |      |
| 255 260 265                                                     |      |
| acc cac cct gct gga att agc gat ttg ctg gct gaa gtg tcc gct gaa | 867  |
| Thr His Pro Ala Gly Ile Ser Asp Leu Leu Ala Glu Val Ser Ala Glu |      |
| 270 275 280                                                     |      |
| gtg gat ggg cca gtg cca gga tac ctc tct tcc ccc cag agc ata aca | 915  |
| Val Asp Gly Pro Val Pro Gly Tyr Leu Ser Ser Pro Gln Ser Ile Thr |      |
| 285 290 295                                                     |      |
| gac acg tgc ctg tac atc ttc acc tct ggc acc acg ggc ctc ccc aag | 963  |
| Asp Thr Cys Leu Tyr Ile Phe Thr Ser Gly Thr Thr Gly Leu Pro Lys |      |
| 300 305 310 315                                                 |      |
| gct gct cgg atc agt cat ctg aag atc ctg caa tgc cag ggc ttc tat | 1011 |
| Ala Ala Arg Ile Ser His Leu Lys Ile Leu Gln Cys Gln Gly Phe Tyr |      |
| 320 325 330                                                     |      |
| cag ctg tgt ggt gtc cac cag gaa gat gtg atc tac ctc gcc ctc cca | 1059 |
| Gln Leu Cys Gly Val His Gln Glu Asp Val Ile Tyr Leu Ala Leu Pro |      |
| 335 340 345                                                     |      |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ctc | tac | cac | atg | tcc | ggg | tcc | ctg | ctg | ggc | atc | gtg | ggc | tgc | atg | ggc | 1107 |
| Leu | Tyr | His | Met | Ser | Gly | Ser | Leu | Leu | Gly | Ile | Val | Gly | Cys | Met | Gly |      |
|     |     | 350 |     |     |     |     | 355 |     |     |     |     | 360 |     |     |     |      |
| att | ggg | gcc | aca | gtg | gtg | ctg | aaa | tcc | aag | ttc | tgc | gct | ggg | cag | ttc | 1155 |
| Ile | Gly | Ala | Thr | Val | Val | Leu | Lys | Ser | Lys | Phe | Ser | Ala | Gly | Gln | Phe |      |
|     | 365 |     |     |     |     | 370 |     |     |     |     | 375 |     |     |     |     |      |
| tgg | gaa | gat | tgc | cag | cag | cac | agg | gtg | acg | gtg | ttc | cag | tac | att | ggg | 1203 |
| Trp | Glu | Asp | Cys | Gln | Gln | His | Arg | Val | Thr | Val | Phe | Gln | Tyr | Ile | Gly |      |
|     | 380 |     |     |     | 385 |     |     |     |     | 390 |     |     |     |     | 395 |      |
| gag | ctg | tgc | cga | tac | ctt | gtc | aac | cag | ccc | ccg | agc | aag | gca | gaa | cgt | 1251 |
| Glu | Leu | Cys | Arg | Tyr | Leu | Val | Asn | Gln | Pro | Pro | Ser | Lys | Ala | Glu | Arg |      |
|     |     |     | 400 |     |     |     |     |     | 405 |     |     |     |     | 410 |     |      |
| ggc | cat | aag | gtc | cgg | ctg | gca | gtg | ggc | agc | ggg | ctg | cgc | cca | gat | acc | 1299 |
| Gly | His | Lys | Val | Arg | Leu | Ala | Val | Gly | Ser | Gly | Leu | Arg | Pro | Asp | Thr |      |
|     |     | 415 |     |     |     |     |     | 420 |     |     |     |     | 425 |     |     |      |
| tgg | gag | cgt | ttt | gtg | cgg | cgc | ttc | ggg | ccc | ctg | cag | gtg | ctg | gag | aca | 1347 |
| Trp | Glu | Arg | Phe | Val | Arg | Arg | Phe | Gly | Pro | Leu | Gln | Val | Leu | Glu | Thr |      |
|     |     | 430 |     |     |     |     | 435 |     |     |     |     | 440 |     |     |     |      |
| tat | gga | ctg | aca | gag | ggc | aac | gtg | gcc | acc | atc | aac | tac | aca | gga | cag | 1395 |
| Tyr | Gly | Leu | Thr | Glu | Gly | Asn | Val | Ala | Thr | Ile | Asn | Tyr | Thr | Gly | Gln |      |
|     | 445 |     |     |     |     | 450 |     |     |     |     | 455 |     |     |     |     |      |
| cgg | ggc | gct | gtg | ggg | cgt | gct | tcc | tgg | ctt | tac | aag | cat | atc | ttc | ccc | 1443 |
| Arg | Gly | Ala | Val | Gly | Arg | Ala | Ser | Trp | Leu | Tyr | Lys | His | Ile | Phe | Pro |      |
|     | 460 |     |     |     | 465 |     |     |     |     | 470 |     |     |     |     | 475 |      |
| ttc | tcc | ttg | att | cgc | tat | gat | gtc | acc | aca | gga | gag | cca | att | cgg | gac | 1491 |
| Phe | Ser | Leu | Ile | Arg | Tyr | Asp | Val | Thr | Thr | Gly | Glu | Pro | Ile | Arg | Asp |      |
|     |     |     |     | 480 |     |     |     |     | 485 |     |     |     |     | 490 |     |      |
| ccc | cag | ggg | cac | tgt | atg | gcc | aca | tct | cca | ggg | gag | cca | ggg | ctg | ctg | 1539 |
| Pro | Gln | Gly | His | Cys | Met | Ala | Thr | Ser | Pro | Gly | Glu | Pro | Gly | Leu | Leu |      |
|     |     | 495 |     |     |     |     |     | 500 |     |     |     |     | 505 |     |     |      |
| gtg | gcc | ccg | gta | agc | cag | cag | tcc | cca | ttc | ctg | ggc | tat | gct | ggc | ggg | 1587 |
| Val | Ala | Pro | Val | Ser | Gln | Gln | Ser | Pro | Phe | Leu | Gly | Tyr | Ala | Gly | Gly |      |
|     |     | 510 |     |     |     |     | 515 |     |     |     |     | 520 |     |     |     |      |
| cca | gag | ctg | gcc | cag | ggg | aag | ttg | cta | aag | gat | gtc | ttc | cgg | cct | ggg | 1635 |
| Pro | Glu | Leu | Ala | Gln | Gly | Lys | Leu | Leu | Lys | Asp | Val | Phe | Arg | Pro | Gly |      |
|     |     | 525 |     |     |     | 530 |     |     |     |     | 535 |     |     |     |     |      |
| gat | gtt | ttc | ttc | aac | act | ggg | gac | ctg | ctg | gtc | tgc | gat | gac | caa | ggg | 1683 |
| Asp | Val | Phe | Phe | Asn | Thr | Gly | Asp | Leu | Leu | Val | Cys | Asp | Asp | Gln | Gly |      |
|     | 540 |     |     |     | 545 |     |     |     |     | 550 |     |     |     |     | 555 |      |
| ttt | ctc | cgc | ttc | cat | gat | cgt | act | gga | gac | acc | ttc | agg | tgg | aag | ggg | 1731 |
| Phe | Leu | Arg | Phe | His | Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly |      |
|     |     |     |     | 560 |     |     |     | 565 |     |     |     |     |     | 570 |     |      |
| gag | aat | gtg | gcc | aca | acc | gag | gtg | gca | gag | gtc | ttc | gag | gcc | cta | gat | 1779 |
| Glu | Asn | Val | Ala | Thr | Thr | Glu | Val | Ala | Glu | Val | Phe | Glu | Ala | Leu | Asp |      |
|     |     |     | 575 |     |     |     |     | 580 |     |     |     |     | 585 |     |     |      |
| ttt | ctt | cag | gag | gtg | aac | gtc | tat | gga | gtc | act | gtg | cca | ggg | cat | gaa | 1827 |
| Phe | Leu | Gln | Glu | Val | Asn | Val | Tyr | Gly | Val | Thr | Val | Pro | Gly | His | Glu |      |
|     |     | 590 |     |     |     |     | 595 |     |     |     |     | 600 |     |     |     |      |
| ggc | agg | gct | gga | atg | gca | gcc | cta | gtt | ctg | cgt | ccc | ccc | cac | gct | ttg | 1875 |
| Gly | Arg | Ala | Gly | Met | Ala | Ala | Leu | Val | Leu | Arg | Pro | Pro | His | Ala | Leu |      |
|     |     | 605 |     |     |     | 610 |     |     |     |     | 615 |     |     |     |     |      |
| gac | ctt | atg | cag | ctc | tac | acc | cac | gtg | tct | gag | aac | ttg | cca | cct | tat | 1923 |
| Asp | Leu | Met | Gln | Leu | Tyr | Thr | His | Val | Ser | Glu | Asn | Leu | Pro | Pro | Tyr |      |
|     | 620 |     |     |     | 625 |     |     |     |     | 630 |     |     |     |     | 635 |      |
| gcc | cgg | ccc | cga | ttc | ctc | agg | ctc | cag | gag | tct | ttg | gcc | acc | aca | gag | 1971 |
| Ala | Arg | Pro | Arg | Phe | Leu | Arg | Leu | Gln | Glu | Ser | Leu | Ala | Thr | Thr | Glu |      |
|     |     |     | 640 |     |     |     |     |     | 645 |     |     |     |     | 650 |     |      |

acc ttc aaa cag cag aaa gtt cgg atg gca aat gag ggc ttc gac ccc 2019  
 Thr Phe Lys Gln Gln Lys Val Arg Met Ala Asn Glu Gly Phe Asp Pro  
                   655                  660                  665  
 agc acc ctg tct gac cca ctg tac gtt ctg gac cag gct gta ggt gcc 2067  
 Ser Thr Leu Ser Asp Pro Leu Tyr Val Leu Asp Gln Ala Val Gly Ala  
                   670                  675                  680  
 tac ctg ccc ctc aca act gcc cgg tac agc gcc ctc ctg gca gga aac 2115  
 Tyr Leu Pro Leu Thr Thr Ala Arg Tyr Ser Ala Leu Leu Ala Gly Asn  
                   685                  690                  695  
 ctt cga atc tgagaacttc cacacctgag gcacctgaga gaggaactct 2164  
 Leu Arg Ile  
 700

gt 2166

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 <212> PRT  
 <213> Homo sapiens

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 Ser Met Ala Ala Leu Leu Leu Leu Pro Leu Leu Leu Leu Leu Pro Leu  
                   20                  25                  30  
 Leu Leu Leu Leu Lys Leu His Leu Trp Pro Gln Leu Arg Trp Leu Pro  
                   35                  40                  45  
 Ala Asp Leu Ala Phe Ala Val Arg Ala Leu Cys Cys Lys Arg Ala Leu  
                   50                  55                  60  
 Arg Ala Arg Ala Leu Ala Ala Ala Ala Ala Asp Pro Glu Gly Pro Glu  
   65                  70                  75                  80  
 Gly Gly Cys Ser Leu Ala Trp Arg Leu Ala Glu Leu Ala Gln Gln Arg  
                   85                  90                  95  
 Ala Ala His Thr Phe Leu Ile His Gly Ser Arg Arg Phe Ser Tyr Ser  
                   100                  105                  110  
 Glu Ala Glu Arg Glu Ser Asn Arg Ala Ala Arg Ala Phe Leu Arg Ala  
                   115                  120                  125  
 Leu Gly Trp Asp Trp Gly Pro Asp Gly Gly Asp Ser Gly Glu Gly Ser  
                   130                  135                  140  
 Ala Gly Glu Gly Glu Arg Ala Ala Pro Gly Ala Gly Asp Ala Ala Ala  
   145                  150                  155                  160  
 Gly Ser Gly Ala Glu Phe Ala Gly Gly Asp Gly Ala Ala Arg Gly Gly  
                   165                  170                  175  
 Gly Glu Pro Ala Ala Pro Leu Ser Pro Gly Ala Thr Val Ala Leu Leu  
                   180                  185                  190  
 Leu Pro Ala Gly Pro Glu Phe Leu Trp Leu Trp Phe Gly Leu Ala Lys  
                   195                  200                  205  
 Ala Gly Leu Arg Thr Ala Phe Val Pro Thr Ala Leu Arg Arg Gly Pro  
   210                  215                  220  
 Leu Leu His Cys Leu Arg Ser Cys Gly Ala Arg Ala Leu Val Leu Ala  
   225                  230                  235                  240  
 Pro Glu Phe Leu Glu Ser Leu Glu Pro Asp Leu Pro Ala Leu Arg Ala  
                   245                  250                  255  
 Met Gly Leu His Leu Trp Ala Ala Gly Pro Gly Thr His Pro Ala Gly  
                   260                  265                  270  
 Ile Ser Asp Leu Leu Ala Glu Val Ser Ala Glu Val Asp Gly Pro Val  
                   275                  280                  285  
 Pro Gly Tyr Leu Ser Ser Pro Gln Ser Ile Thr Asp Thr Cys Leu Tyr  
                   290                  295                  300



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Phe | Thr | Ser | Gly | Thr | Thr | Gly | Leu | Pro | Lys | Ala | Ala | Arg | Ile | Ser | 305 | 310 | 315 | 320 |
| His | Leu | Lys | Ile | Leu | Gln | Cys | Gln | Gly | Phe | Tyr | Gln | Leu | Cys | Gly | Val | 325 | 330 | 335 |     |
| His | Gln | Glu | Asp | Val | Ile | Tyr | Leu | Ala | Leu | Pro | Leu | Tyr | His | Met | Ser | 340 | 345 | 350 |     |
| Gly | Ser | Leu | Leu | Gly | Ile | Val | Gly | Cys | Met | Gly | Ile | Gly | Ala | Thr | Val | 355 | 360 | 365 |     |
| Val | Leu | Lys | Ser | Lys | Phe | Ser | Ala | Gly | Gln | Phe | Trp | Glu | Asp | Cys | Gln | 370 | 375 | 380 |     |
| Gln | His | Arg | Val | Thr | Val | Phe | Gln | Tyr | Ile | Gly | Glu | Leu | Cys | Arg | Tyr | 385 | 390 | 395 | 400 |
| Leu | Val | Asn | Gln | Pro | Pro | Ser | Lys | Ala | Glu | Arg | Gly | His | Lys | Val | Arg | 405 | 410 | 415 |     |
| Leu | Ala | Val | Gly | Ser | Gly | Leu | Arg | Pro | Asp | Thr | Trp | Glu | Arg | Phe | Val | 420 | 425 | 430 |     |
| Arg | Arg | Phe | Gly | Pro | Leu | Gln | Val | Leu | Glu | Thr | Tyr | Gly | Leu | Thr | Glu | 435 | 440 | 445 |     |
| Gly | Asn | Val | Ala | Thr | Ile | Asn | Tyr | Thr | Gly | Gln | Arg | Gly | Ala | Val | Gly | 450 | 455 | 460 |     |
| Arg | Ala | Ser | Trp | Leu | Tyr | Lys | His | Ile | Phe | Pro | Phe | Ser | Leu | Ile | Arg | 465 | 470 | 475 | 480 |
| Tyr | Asp | Val | Thr | Thr | Gly | Glu | Pro | Ile | Arg | Asp | Pro | Gln | Gly | His | Cys | 485 | 490 | 495 |     |
| Met | Ala | Thr | Ser | Pro | Gly | Glu | Pro | Gly | Leu | Leu | Val | Ala | Pro | Val | Ser | 500 | 505 | 510 |     |
| Gln | Gln | Ser | Pro | Phe | Leu | Gly | Tyr | Ala | Gly | Gly | Pro | Glu | Leu | Ala | Gln | 515 | 520 | 525 |     |
| Gly | Lys | Leu | Leu | Lys | Asp | Val | Phe | Arg | Pro | Gly | Asp | Val | Phe | Phe | Asn | 530 | 535 | 540 |     |
| Thr | Gly | Asp | Leu | Leu | Val | Cys | Asp | Asp | Gln | Gly | Phe | Leu | Arg | Phe | His | 545 | 550 | 555 | 560 |
| Asp | Arg | Thr | Gly | Asp | Thr | Phe | Arg | Trp | Lys | Gly | Glu | Asn | Val | Ala | Thr | 565 | 570 | 575 |     |
| Thr | Glu | Val | Ala | Glu | Val | Phe | Glu | Ala | Leu | Asp | Phe | Leu | Gln | Glu | Val | 580 | 585 | 590 |     |
| Asn | Val | Tyr | Gly | Val | Thr | Val | Pro | Gly | His | Glu | Gly | Arg | Ala | Gly | Met | 595 | 600 | 605 |     |
| Ala | Ala | Leu | Val | Leu | Arg | Pro | Pro | His | Ala | Leu | Asp | Leu | Met | Gln | Leu | 610 | 615 | 620 |     |
| Tyr | Thr | His | Val | Ser | Glu | Asn | Leu | Pro | Pro | Tyr | Ala | Arg | Pro | Arg | Phe | 625 | 630 | 635 | 640 |
| Leu | Arg | Leu | Gln | Glu | Ser | Leu | Ala | Thr | Thr | Glu | Thr | Phe | Lys | Gln | Gln | 645 | 650 | 655 |     |
| Lys | Val | Arg | Met | Ala | Asn | Glu | Gly | Phe | Asp | Pro | Ser | Thr | Leu | Ser | Asp | 660 | 665 | 670 |     |
| Pro | Leu | Tyr | Val | Leu | Asp | Gln | Ala | Val | Gly | Ala | Tyr | Leu | Pro | Leu | Thr | 675 | 680 | 685 |     |
| Thr | Ala | Arg | Tyr | Ser | Ala | Leu | Leu | Ala | Gly | Asn | Leu | Arg | Ile |     |     | 690 | 695 | 700 |     |

&lt;210&gt; 103

&lt;211&gt; 19

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&lt;213&gt; Artificial Sequence

&lt;220&gt;

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19